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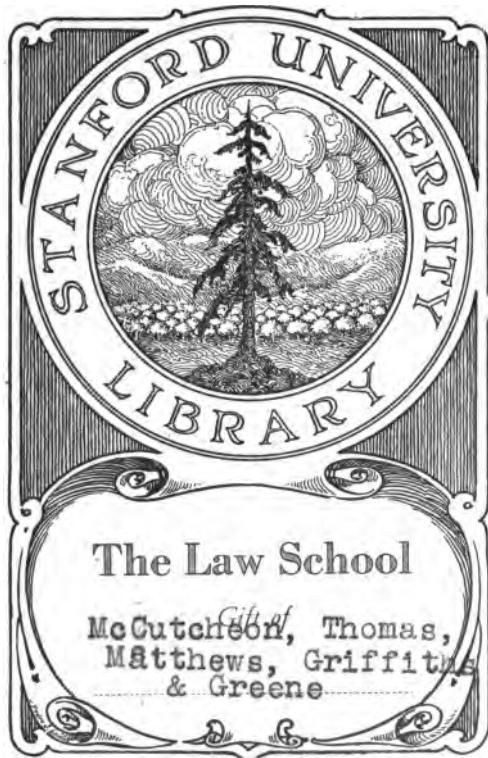
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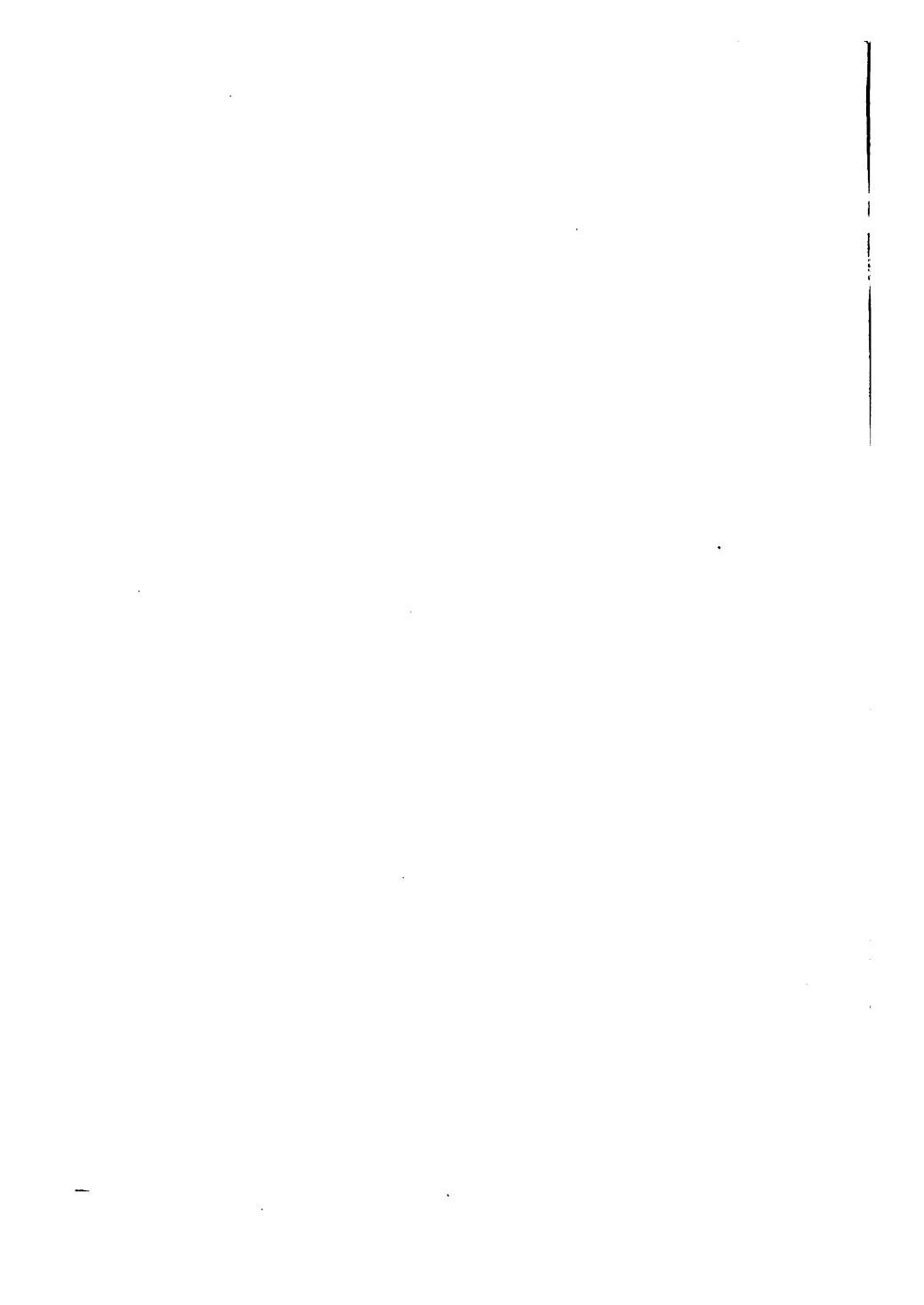
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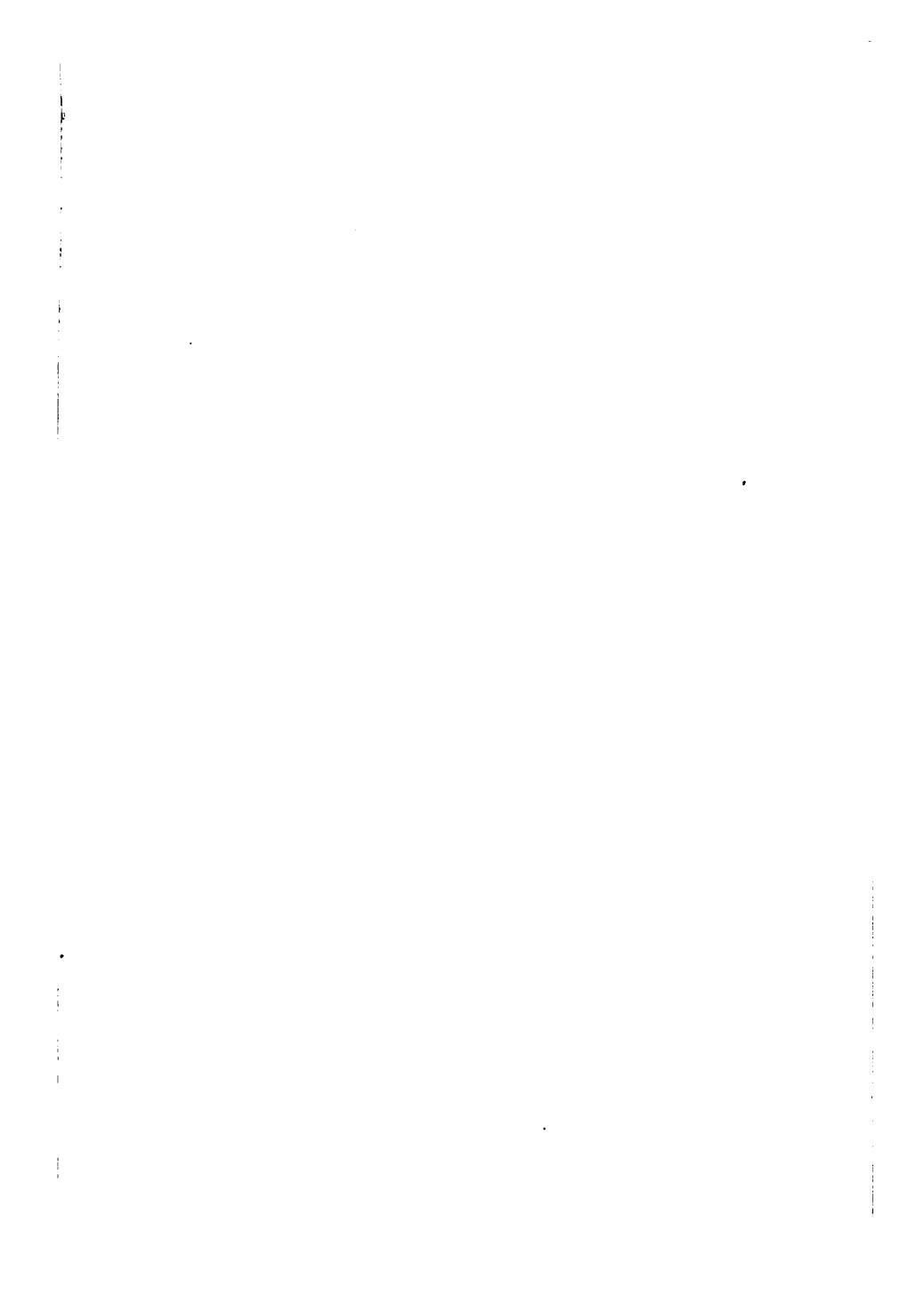
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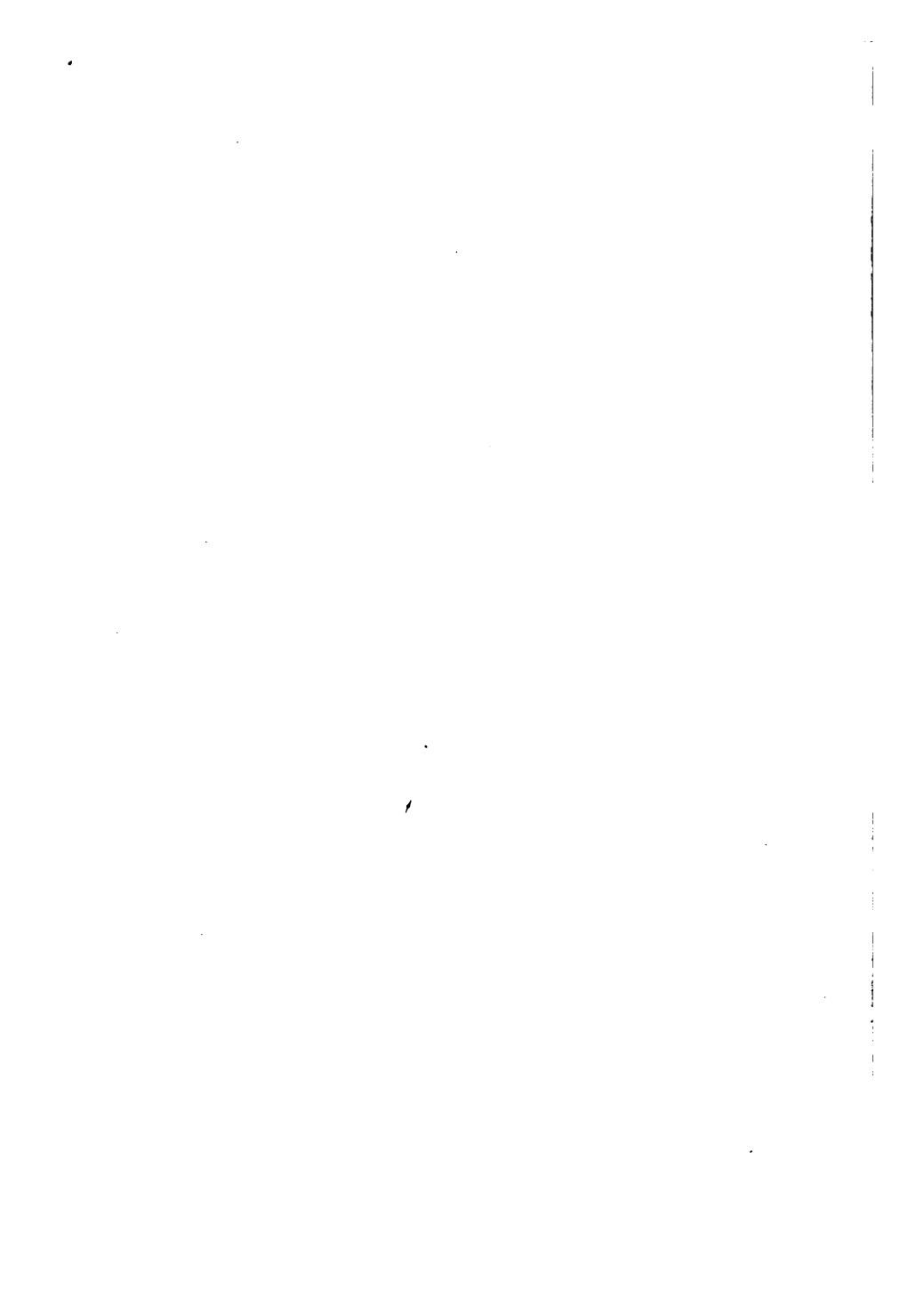
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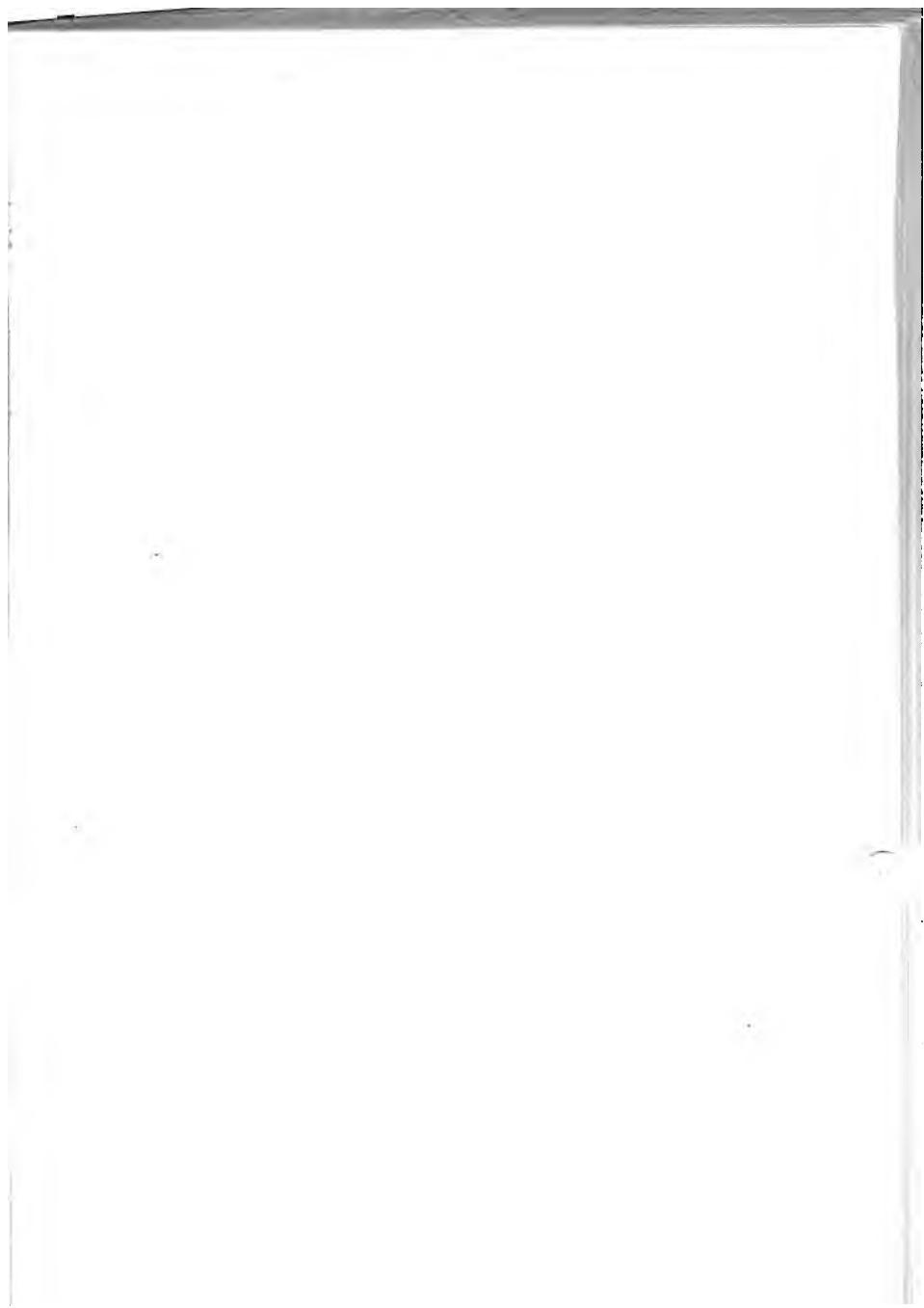


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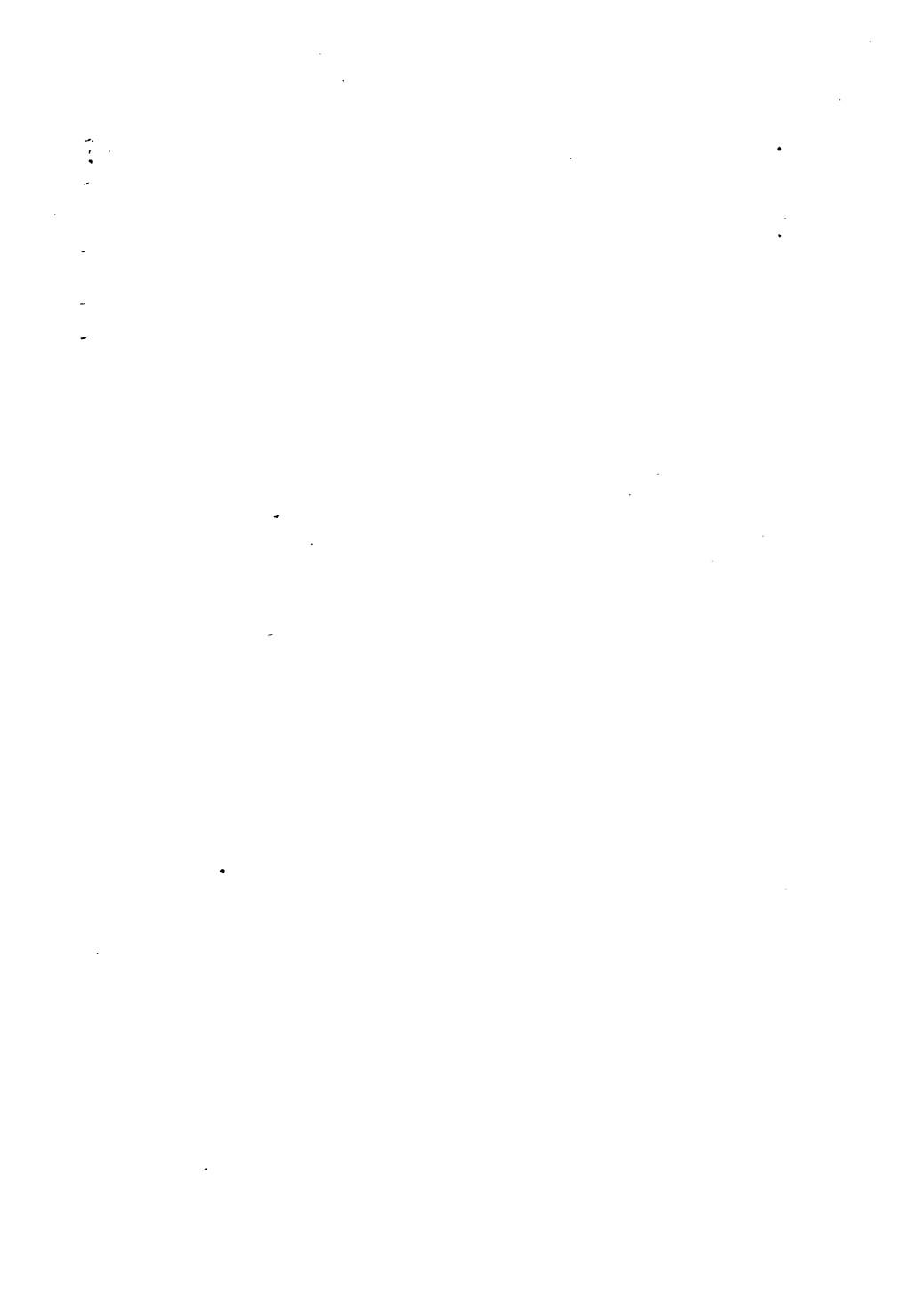


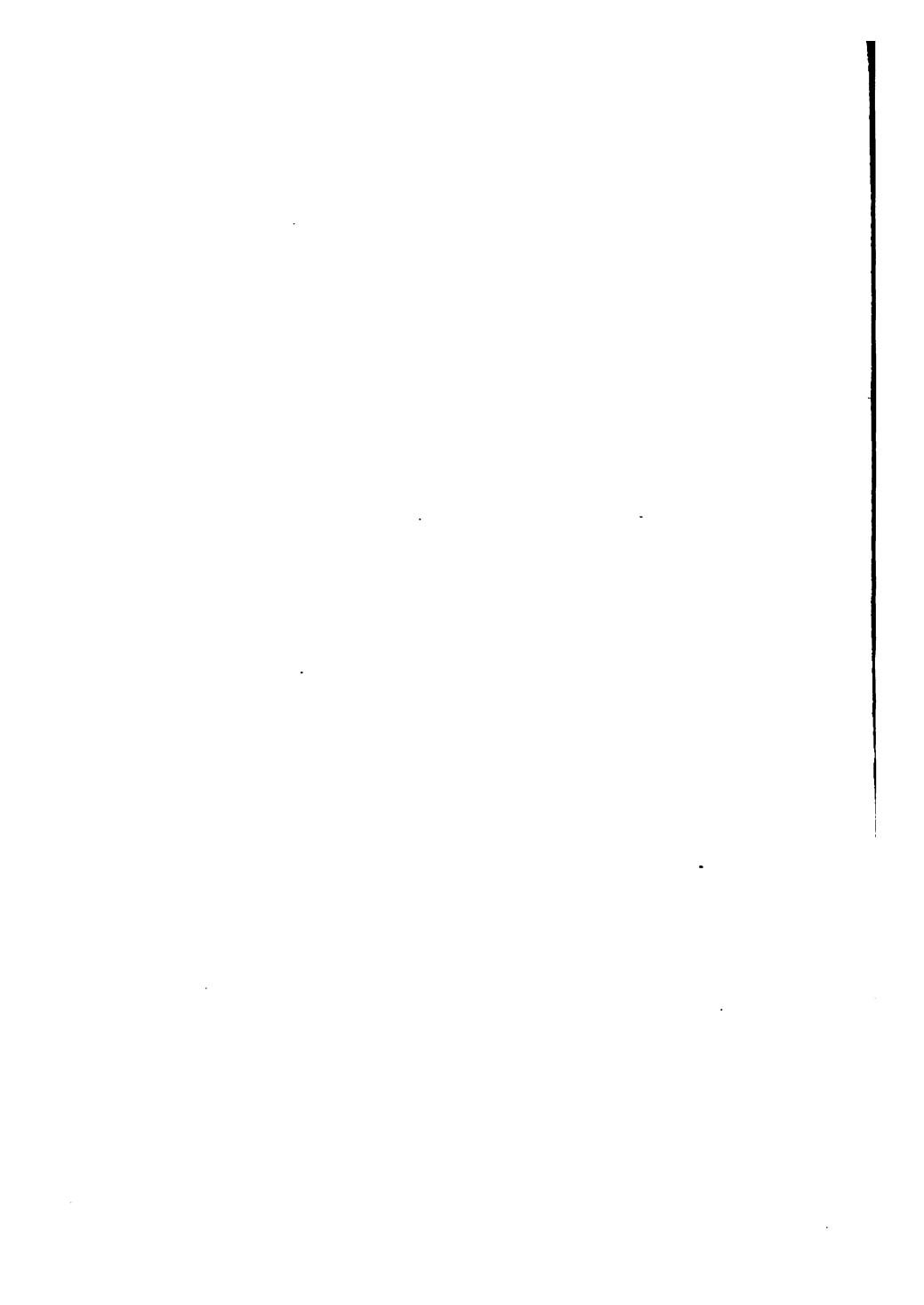


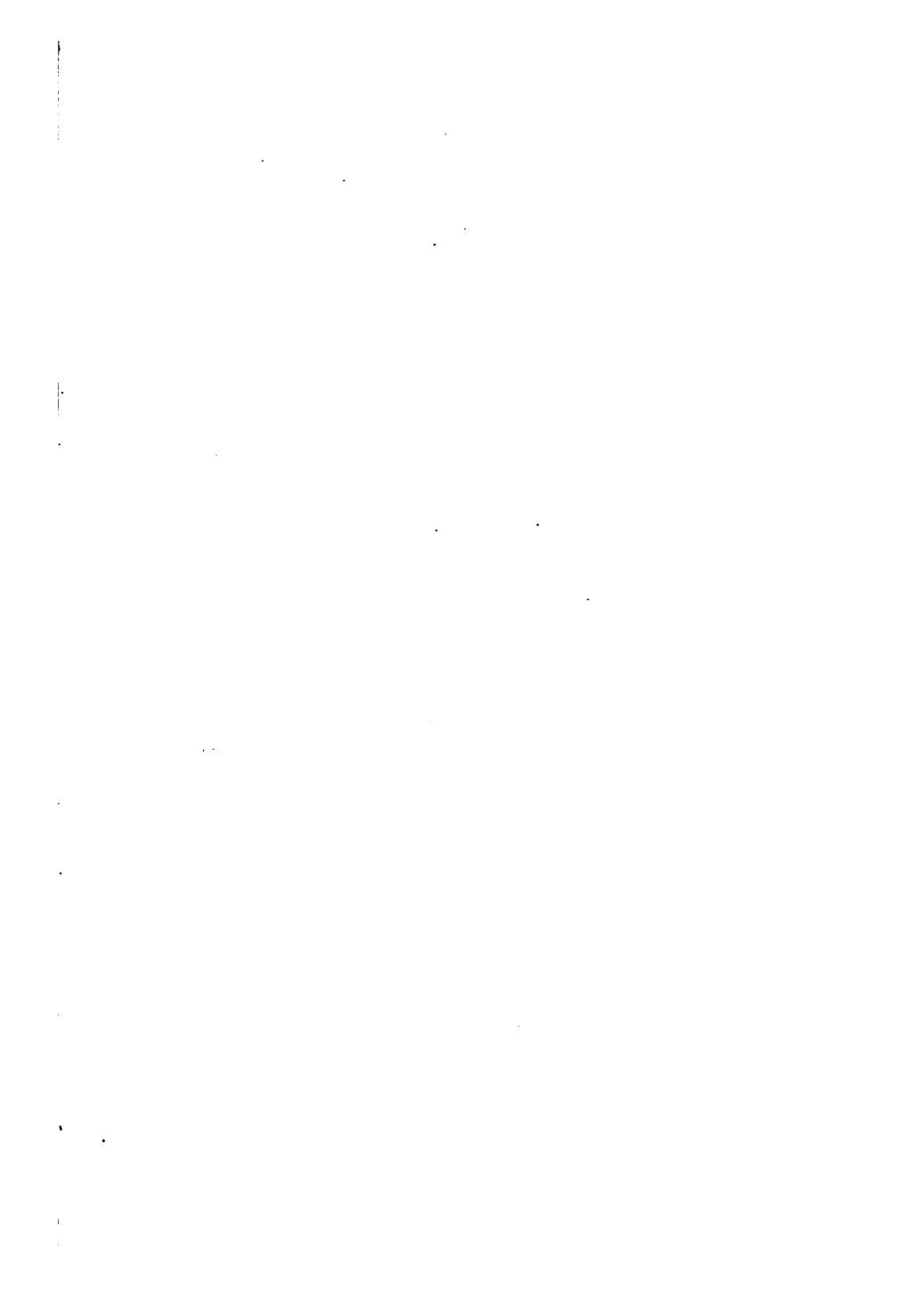












By ARTHUR TWINING HADLEY

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Railroad Transportation

Its History and Its Laws

BY

ARTHUR TWINING HADLEY

PRESIDENT OF YALE UNIVERSITY; SOMETIME LABOR COMMISSIONER OF THE
STATE OF CONNECTICUT; AUTHOR OF "ECONOMICS: AN ACCOUNT
OF THE RELATIONS BETWEEN PRIVATE PROPERTY AND
PUBLIC WELFARE"

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PREFACE.

THIS book deals with those questions of railroad history and management which have become matters of public concern. It aims to do two things: first, to present clearly the more important facts of American railroad business, and explain the principles involved; second, to compare the railroad legislation of different countries, and the results achieved.

The two things need to be viewed in connection with one another. The attempt to manage railroads without regard to the demands of public policy, or to legislate concerning railroads without regard to the necessities of railroad business, results in disastrous failure. This fact has been gradually recognized by thoughtful men on both sides. But it has been hard to get any comprehensive view of the subject in its different aspects. The brilliant book of C. F. Adams, Jr., stands almost alone; and even this treats of but a few questions among many. The man who would really study the subject, must seek his material among hundreds of different arguments and reports; many of them extremely able, but few of them easy of access, and still fewer at all complete in themselves.

It was to meet this want that the author first undertook to deliver a course of lectures on Railroads and the Social Problems connected with them. Part of the material of these lectures is here presented to the public.

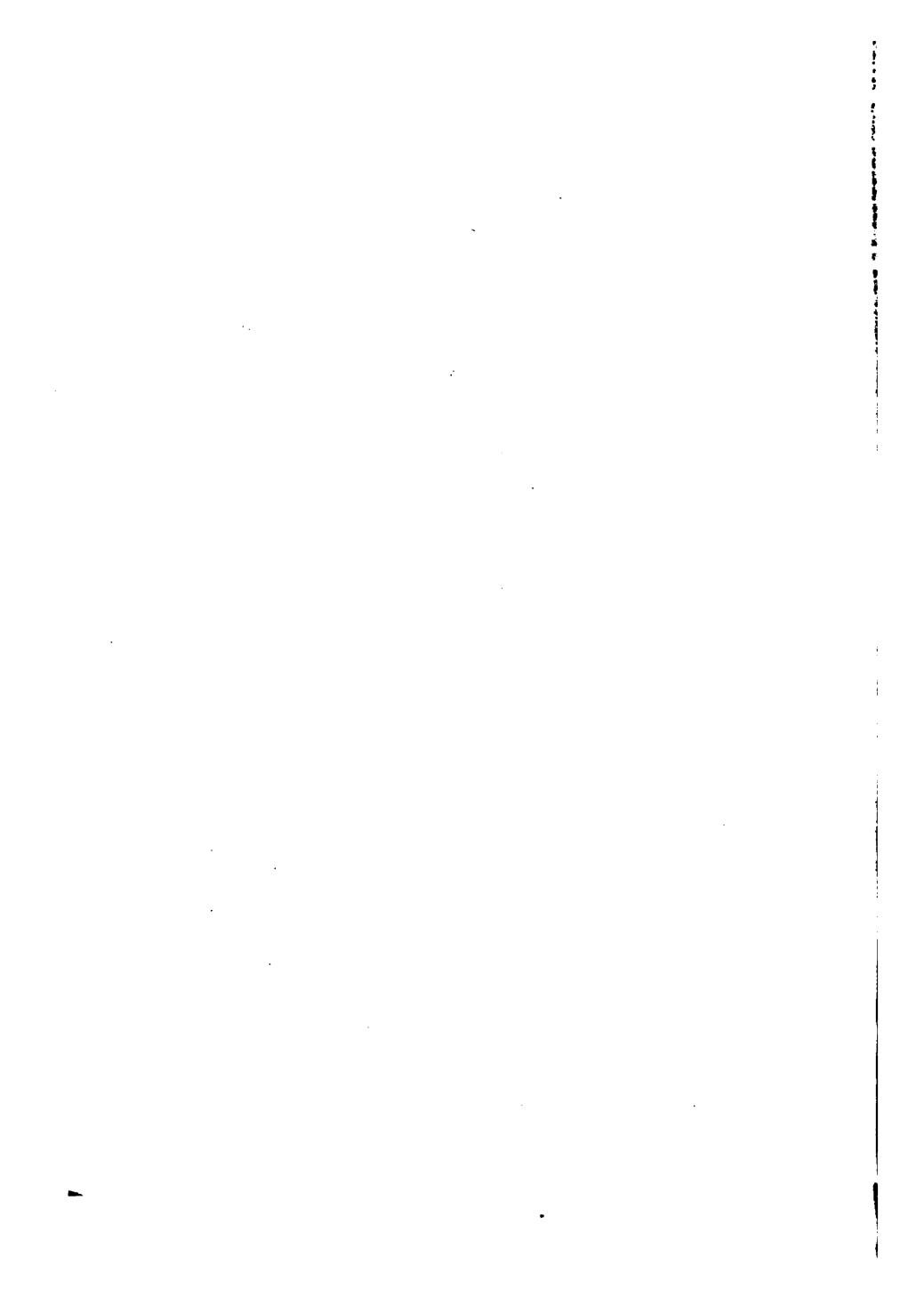
One of the pleasantest things in the whole work has been

the cordial help which the author has uniformly received from men, in all positions, to whom he has had occasion to apply for information. Special acknowledgments are due to Mr. S. Wright Dunning, of *The Railroad Gazette*, for constant suggestions with regard to the work, as well as for the ready permission to use material which has appeared, both signed and unsigned, in the columns of his journal.

NEW HAVEN, CONN., Oct. 1, 1885.

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RAILROAD TRANSPORTATION: ITS HISTORY AND ITS LAWS.

CHAPTER I.

THE MODERN TRANSPORTATION SYSTEM.

Its importance in history—Growth of the postal service—The telegraph—Merchant shipping—Substitution of steam for sail—Invention of railroads—Misunderstanding as to their real character and uses—Changes since 1850—Consolidation—Railroad extension—Development of business—Reduction of rates—Widened field for speculation—Growth of large cities and large establishments—Discrimination—Jealousy of railroad power—Characteristics of railroad legislation since 1870.

A. de Foville : "De la Transformation des Moyens de Transport." Paris, 1880.

E. Sax : "Die Verkehrsmittel in Volks- und Staatswirtschaft." Vienna, 1878.

F. X. v. Neumann-Spallart : "Uebersichten der Weltwirtschaft, Jahrgang 1881-2." Stuttgart, 1884.

ON the fourth of July, 1828, Charles Carroll, last surviving signer of the Declaration of Independence, laid the first rail of the Baltimore and Ohio Railroad. One man's life formed the connecting link between the political revolution of the last century and the industrial revolution of the present.

The second reaches wider and deeper than the first. Yet there are few who realize its full importance, or who seriously try to understand it. A new system of com-

mercial and social relations has arisen among us. Small industries and independent workmen are giving place to large factories and factory operatives. We no longer produce for the home market, but for the world's markets. A rapidly increasing share of productive wealth is held by corporations. The men who manage this mass of corporate capital form the sole connecting link between investors, workmen, and consumers. The classes become more and more sharply marked. Conflicts of interest arise between them—sometimes apparent, sometimes real,—which result in disastrous struggles or in class legislation of the worst type. Yet the majority of men seem indifferent to the real importance of these events. Occasionally they make feeble efforts to resist them. More often they allow themselves to be hurried on in the general movement, without even trying to understand what it means or whither it is leading.

Of these changes the railroad is at once an instrument and an example. As a carrier, it furnishes the means which has made modern business methods possible. As an organization, it furnishes in itself an extreme type of those methods. No one symptom, in business or in politics, marks the direction of national activity so clearly as does the way in which the transportation system is organized and controlled.¹

This last fact is by no means confined to modern history. The greatness of ancient Rome had no more characteristic monument than her system of military roads. With the fall of the Roman Empire the roads fell into decay; and distant communication on a large scale was first revived by a league of independent towns, which, from the thirteenth to the fifteenth century, controlled

¹ M. M. v. Weber: "Nationalität und Eisenbahnpolitik." Vienna, 1876.

the commerce of Northern Europe on water and on land. The history of this Hanseatic League, extending from Norway to Belgium, from London to the heart of Russia, is one of the most striking illustrations of the political system of the Middle Ages. With a change of political system the transportation system changed also. One of the first steps of Louis XI. of France, in his efforts to create a national power and national life, was to take the postal service out of the hands of the cities or other feudal authorities and make it a matter of national administration. Modern history—the history of nations as such—may almost be said to have begun at this point.

Two or three centuries later, France obtained a national system of roads and canals. The idea was largely due to Colbert, the minister of Louis XIV. It was not executed in detail till the middle of the last century. Many abuses grew up in connection with it; but on the whole it was probably the soundest and most efficient part of the French administration. A system of lines of communication, radiating from Paris, was constructed by skilled engineers, and placed under the supervision of men of talent, specially trained for the purpose at the École des Ponts et Chaussées. The whole arrangement was further improved by Napoleon, and has served as a basis for the present system of railroad supervision.

In no other country was the same completeness of organization possible. In England there was no such organization at all. The roads were cared for—and badly cared for—by local authorities. Through communication was established, not by government, but by private enterprise. Turnpikes were first constructed at the beginning of the last century. The first great English canal was built in 1760. The next forty years was a period

of great activity in canal building; but it was left to private enterprise, with little or no government interference.¹

While England was thus far behind in the matter of land communication, on the sea she took the lead in a policy of her own. The Navigation Act of 1651, denying foreign vessels the right to carry to or from England the commerce of any country but their own, was in every sense a national measure. It was a systematic attempt to advance the shipping interests of England at the expense of those of other states. It bore the stamp of English character in every line. By crippling the commerce of Holland, it gave England her supremacy on the sea. It was imitated by other nations in the vain hope of producing similar results. It continued in force for nearly two centuries; being regarded as the bulwark of England's maritime power, when really it had ceased to be of any service to her shipowners, and had become an intolerable nuisance to her merchants.²

These matters of transportation policy in past centuries are chiefly important as illustrating the drift of the general history of the time. In itself the transportation business was small. The movement of goods in a year on all the through routes of the world a century ago would not equal the movement on a single one of our trunk-lines of railroad at the present day. Transportation policy was but a straw showing the direction of the political wind. To-day all this has changed. Transportation has not merely become important in itself, it has become a controlling factor which gives shape to each

¹ Gustav Cohn: "Untersuchungen über die Englische Eisenbahnpolitik." Leipzig, 1874. Vol. i., pp. 11-16.

² W. S. Lindsay: "History of Merchant Shipping." London, 1874-76. Vol. iii., pp. 53-286.

man's private business, and to the public policy of every civilized nation.

All this has grown up within a century; nearly all, within half a century. The opening of canals, and the development of river navigation, mark the beginning of the change: but it was only a beginning. The canal system of America was fairly well developed fifty years ago; that of Europe still more completely so. Yet it is astonishing to find how little long-distance communication there had been up to that time. It was not until 1833 that a daily mail was established between London and Paris. Even after that, there was communication with the other parts of the continent only twice a week. The English charge on foreign letters, apart from the ship's postage and the expense in foreign countries, varied from twenty-eight to eighty-four cents. The inland communication was more frequent, but the charges were exorbitant, averaging about twenty cents per sheet. No wonder that a vast deal of private letter conveyance was done, in defiance of the government monopoly. In the years 1834-5 the pressure in favor of low rates began to make itself felt. The movement was headed by Rowland Hill, whose work on "Postal Reform, its Importance and Practicability" appeared in 1837. His proposal to reduce inland postage to one-tenth its former figure was so sweeping as to create a great sensation, and not a little opposition; but the idea was carried out in 1840, postage stamps being introduced at the same time. The financial results did not, at first, meet the more sanguine expectations; but the social effects far outweighed any temporary financial loss.

The example thus set by England was soon followed by other civilized nations. The first changes in the United States were made in 1845. The previous rates had been

from six to twenty-five cents, according to distance. They were now reduced to five or ten cents; and soon afterwards (1851, 1855) in general to three cents. The same policy was followed throughout Europe at almost the same time. With lower rates came better service and better facilities. In the year 1851 these reforms were tolerably complete as far as concerned national postage of the leading countries; and by a series of postal treaties they were rapidly extended to international correspondence within Europe itself. In the ocean postal service the high rates continued much longer. The attempt to subsidize steamship lines led to an attempt to tax the letters carried by those steamships. England was thus for a long time actively opposed to the lowering of ocean postage rates; the United States did not take strong ground in its favor until after the abandonment of the Collins line subsidy in 1858. From that time forward there was a steady lowering of rates, culminating in the establishment of the Postal Union in 1874-5, with its uniform rate of five cents per half ounce between a number of countries on both sides of the Atlantic. This Union was more closely organized in 1879; and it has gradually come to include the whole civilized world. The statistics of the Union show that the total number of letters and packages delivered by mail now amounts to 10,000,000,000 annually.¹

In the same year (1837) with the appearance of Rowland Hill's proposals for cheap postage, the electric telegraph² was first patented. Four distinct patents were

¹ For details, see Neumann-Spallart: "Uebersichten," 389-398.

² De Foville, pp. 203-205. For detailed statistics on the telegraph see Neumann-Spallart, 399-413; "Tenth Census of the U. S." (1880), vol. iv., pp. 804-849 (numbers at the bottom of page). The latest authority on the telegraph in its industrial or political aspect is Schöttle: "Der Telegraph in administrativer und finanzieller Hinsicht." Stuttgart, 1882.

issued almost simultaneously. The first working line seems to have been established in England about 1839. The U. S. Government enabled Prof. Morse to construct the first American telegraph—between Baltimore and Washington—in 1844. The attempt was made in many countries of continental Europe to confine the use of the telegraph to the government, and not allow private individuals to send messages. But this was too much against the spirit of the age to be carried out successfully; and while the governments retained their monopoly of telegraph ownership, they were obliged to give up the attempt to monopolize its use. The telegraph service of Germany and Austria dates from 1849; that of France from 1851. Telegraphic communication between Europe and America, which had been held for about a month in 1858, was first permanently secured in 1865. Technical improvements and inventions have followed one another in such rapid succession in recent years that we cannot even enumerate them; nor can we give any history of the telephone, the most important of them all. There are now about 600,000 miles of telegraph line, with at least 1,600,000 miles of wire; an increase of some 50 per cent. in ten years. The total number of messages of all kinds cannot fall far short of 200,000,000 annually.

Of scarcely less importance has been the development of merchant shipping. The nominal tonnage of the world's marine has increased from about 5,000,000 in 1830 to 20,000,000 in 1880¹—300 per cent in fifty years. But the increase in effective carrying power was far greater than these figures would indicate. The effectiveness de-

¹ These figures, especially for the earlier date, can only be roughly given, and authorities differ widely. For more careful attempts at computation, on a somewhat different basis, see Kiaer: "Statistique Internationale de la Navigation Maritime." Christiania, 1881.

pends not only upon the tonnage but also upon the rapidity of movement ; and this was fast increasing. A part of the increase was due to improvements in build ; a part to improved methods of handling freight. A part was due to the opening of new lines of communication, like the Suez Canal. A part—and by no means a small one—was due to the study of the prevailing winds, first taken up on a large scale by Lieut. Maury some forty years ago. It was found that the winds had a certain regularity even in those parts of the ocean where they seemed to blow quite irregularly. By taking, not the shortest course, but a course where the winds are likely to be favorable, the average duration of the voyage on many routes was shortened thirty or forty per cent.

But the most radical change was made by the gradual substitution of steam for sail as a mode of propulsion.¹ The practical usefulness of the invention dates from the early years of the present century.² It was long after it had been employed on inland waters or in the coasting trade before it was supposed possible that it could compete with sail on ocean routes. The first efforts of England to secure ocean steamship lines were the result of political rather than business considerations. But what seemed a hazardous experiment in 1838 was a proved success in 1850. There was a hard fight beginning between steam and sail ; each new invention gave steam a new advantage. The substitution of the screw for the side-wheel and the introduction of compound engines economized force and fuel. The attempts to use sailing vessels with auxiliary screw were not very successful. The increase in the size of vessels gave steamers a relative

¹ Lindsay : "History of Merchant Shipping," vol. iv.

² "Tenth Census of the U. S.," iv., 649-652.

advantage; for, while it somewhat increased the consumption of fuel, it increased the carrying capacity much faster. There are now steamships which burn but half an ounce of coal per ton of cargo per mile. The rather questionable device of water ballast and the rise of the "ocean tramp"—the name given to such steamers as have no regular route, but run wherever and whenever they can get a cargo—still further tends to drive sailing vessels out of lines of trade in which they had hitherto felt themselves secure. The effect is clearly enough seen in the statistics. Of the world's tonnage in 1870, eleven per cent. was steam, eighty-nine per cent. sail. In 1880 twenty-five per cent. was steam, seventy-five per cent. sail. Now a steamer, on account of superior speed, is from three to five times as efficient as a sailing vessel of the same size. With an apparent increase of only fifteen per cent. in tonnage, there has been an actual increase of from thirty-five to fifty per cent. in carrying power—an increase with which international trade has more than kept pace.¹

What happened on sea, in the substitution of steam for sail, was more than paralleled on land in the substitution of railroads for roads and canals.

The change dates from the beginning of the present century. In 1801 the first chartered line of rails was laid—a short horse-railroad from Wandsworth to Croydon, in the suburbs of London. Similar lines were built in almost every succeeding year. In 1814 it was discovered that cars could be propelled by the adhesion of a smooth wheel to a smooth rail. This showed how steam power could be applied. It only remained to find a practicable

¹ M. G. Mulhall: "Balance Sheet of the World." London, 1881. Table 10 and remarks.

means of generating this power in a locomotive engine. Two things were necessary for this purpose—sufficient draft to keep up a hot fire, and a large heating surface in a small compass on which to apply it. The escape-steam blast provided the draft. The tubular boiler provided the heating surface. When George Stephenson combined the two, the result was the modern railroad locomotive, complete in its essential features.¹

It had required a hard struggle to secure a charter for the Liverpool and Manchester railroad, so strong was the opposition of vested interests. Only such a politician as Huskisson could have done it at all; and even he had to spend £70,000 to carry it through. But the success of this one railroad assured the construction of many others, not in England only, but elsewhere. The United States had already made a beginning in railroad construction; the work was now actively pushed forward at half a dozen different points. The Belgian Government was quick to lay out an admirable railroad system; and several districts of Germany were not far behind.

It was not a mere accident of history that France took no part in this movement. Nor was it simply because her admirable system of roads and canals made railroads seem less necessary. It was because France disliked to build railroads at all until it could be done under a comprehensive plan. It was not in the French character to do things piece-meal. Yet this was exactly what other nations were doing, and were forced to do, with their first railroads. Nowhere, except in Belgium, were the lines systematically arranged. Nowhere was the management any thing better than a makeshift. They were playing

¹ W. H. Brown: "History of the First Locomotives in America." New York, 1871. pp. 49-51.

and experimenting with a new device, of whose uses and laws they had but a faint idea. They supposed that its chief use would be the conveyance of passengers, and that it would be subject to the same laws as the old turnpike roads. When the first charters were granted in England and Germany, it was assumed that the company would own the road-bed, simply as a canal company would own its canal; that any man could own cars and run trains, just as he would own and run canal boats or wagons. Under this view, the railroad charges were to be nothing more nor less than a system of tolls. Many railroad charters contained long schedules of this kind, with hundreds of different provisions, none of them of any practical use. These more obvious absurdities have been gradually abandoned; but many of the indirect effects of this idea are still felt in the legislation of the present day.¹

The early railroad engineers overestimated the speed which could be readily attained. Fifty years ago it was generally expected that passenger trains would soon run at rates of from seventy-five to one hundred miles an hour—a prediction which has as yet remained unfulfilled. On the other hand, they underestimated the railroad's capacity for doing work cheaply. It was not supposed that railroads would ever be able to compete with water routes in the carriage of freight, except where speedy delivery was of the first importance. Nor was it at that time desired that they should do so. The first English railroad charter contained provisions expressly intended to prevent such competition. A generation later, in the State of New York itself, there was a loud popular cry

¹ Chas. Francis Adams, Jr.: "Railroads and Railroad Questions." New York, 1878. pp. 82-84. Cohn: "Untersuchungen," chapters i., ii.

that the New York Central must be prohibited from carrying freight in competition with the Erie Canal.¹ The main field of usefulness of railroads, and the means by which that field was to be developed, were not merely ignored, they were positively shunned.

This period of railroad infancy ended about the year 1850. The crisis of 1847 marked its close in England. The Revolution of 1848-51 was the dividing line on the continent of Europe. The land grants of 1850, and the formation of three trunk lines² from the seaboard to the interior may be taken as the beginning of the new era in the United States. It began to be seen and felt that a steam railroad was something more than an exaggerated turnpike or horse railroad, and that it had functions and laws of its own. The changes were: first, the consolidation of old roads; second, the construction of new ones in a great variety of conditions; third, and most important, the development of traffic by cheap rates and new methods.

1. *Consolidation.*—The early railroad charters were for short independent lines. In England they averaged only about fifteen miles in length. In the year 1847 there were five thousand miles of railroad open, owned by several hundred different companies. Twenty-five years later there were thirteen thousand miles, virtually the whole of which was in the hands of twelve different companies. In France, the number of independent systems was reduced from thirty-three in 1847 to eleven in 1852, and six in 1859. If we follow back the history of almost any railroad in the United States, we find the same tendency

¹ Henry V. Poor: "Manual of Railroads of the United States for 1881." Introduction, pp. 24-39.

² There had been for ten years previous an all-rail route across New York State, but its consolidation under one company did not take place till 1853. The Erie was opened as a through route in 1851, the Pennsylvania in 1854.

illustrated. The line of the New York Central between the Hudson and Lake Erie alone represents the union of what was originally sixteen different companies. The economic laws which govern this movement will form a subject of subsequent discussion.¹ Railroad consolidation has always been regarded by the public with a kind of vague fear. As long as it was a mere union of connecting lines into one through route, the advantages to the public in speed, accuracy, and good organization have been so obvious as to silence the fear of corporate power. When it was a case of the union of competing lines, the advantages to the public have been less obvious, the dangers apparently greater, and the opposition always louder and sometimes more effective.

2. *Extension.*—Consolidation of itself created through routes and long-distance traffic. Improvements in engineering produced the same results in another way. It had been at first supposed that railroads could only work to advantage on level routes; in general, where good roads or canals already furnished cheap transportation. It was now found possible to build mountain railroads; not merely to supersede existing means of communication, but to go far beyond them. The first railroad across the Alps—the Semmerring from Vienna toward Trieste—was built in 1854. The Brenner Railroad from Munich to Italy was completed in 1867. The Mt. Cenis, from Lyons to Turin, with a tunnel seven and a half miles in length, was opened in 1871; the St. Gothard, through Switzerland, with a nine-mile tunnel under the very heart of the Alps, in 1882. Other parts of the world had shared in this progress. The Union and Central Pacific route was opened in 1869; so many other roads across the

¹ Chapters iv., v.

Rocky Mountains have since been built that we cease to count them any thing extraordinary. British India is traversed by railroads in every direction, eleven thousand miles in all. A railroad across the main chain of the Andes from Chili to Buenos Ayres is just being completed. A line across the Ural Mountains and far into Siberia is in process of construction.

Some of these roads have created international trade where formerly there was little or no communication. Others have pushed on in advance of civilization itself, creating the communities which were to support them. These roads could not be built expensively; it was a question between a cheap road or no road at all. In America the question how to build such roads took care of itself. Land was cheap; wood was cheap; it only remained to select such a course as would involve the least outlay for grading, cuttings, or bridges; put down sleepers on the ground itself, lay the cheapest rails that would hold together, and trust to the future for any more solid construction. In Europe, on the other hand, the question was made the subject of scientific study. Great attention was paid to systems of narrow-gauge railroad construction to be applied in the case of localities with light traffic, in mountainous districts, or under stress of military necessity.¹

Military and political reasons have had a great deal to do with the bolder instances of railroad extension. It is to such reasons that we owed the building of the Union Pacific. The same thing may be said of all the large mountain railroads of the Old World. But railroads have

¹The engineering literature on the subject is large. From the political standpoint the most noticeable work is probably "M. M. v. Weber: Der Staatliche Einfluss auf die Entwicklung der Eisenbahnen minderer Ordnung." Vienna, 1878.

a special use in modern war quite apart from these more general considerations of political influence. Napoleon is quoted as saying, that the strength of an army lies in its legs. Modern improvements have made this saying still truer to day than it was eighty years ago. The lack of a few miles of railroad connection in 1859 probably caused Austria to lose the battles of Solferino and Magenta, and changed the whole destiny of Italy. The energetic control and use of every railroad line in 1870 enabled Germany to put her troops where they were most needed, and strike those telling blows which virtually decided the contest in the first few days. One of the most important lessons of our war was upon the value of railroad communication at the very front. We learned to destroy it for the enemy quickly and thoroughly; to repair or construct it for ourselves less thoroughly but about as quickly. How this lesson has been taken to heart is shown by the military railroads of France in Tunis, of England in Egypt, of Russia beyond the Caspian. It is seen on a larger scale in the system of railroads in Prussia, Austria, Russia, or India; many of them built not as one would build docks and canals, but as one must build forts and arsenals.

Under all these influences the railroad mileage of the world increased from twenty thousand in 1850 to sixty-six thousand in 1860, one hundred and thirty-seven thousand in 1870, two hundred and twenty-five thousand in 1880, and about two hundred and eighty-five thousand at present. Of the later construction very little was intended to meet the wants of existing business. Some of it was due to political considerations; the remainder—perhaps two thirds of the whole amount—was intended to develop new regions and new trade.¹

¹ Neumann-Spallart, pp. 413-430.

3. Business Development.—Rapid as has been the growth of the railroad mileage, traffic has kept pace with it. It is estimated that the total number of tons moved in 1875 was about eight hundred million. At present it is about twelve hundred million annually, while the passenger movement has increased from fourteen hundred million to twenty-four hundred million. If we could take distance as well as quantity into account, the change (for freight at any rate) would be still greater. To a certain extent this increased intensity of use of railroads is due to improvements in engineering; to a much greater extent it is the result of improved business methods.

It took some time for railroad authorities to wake up to a fact which now seems self-evident, namely, that the profitableness of a railroad as a whole, or of any particular part of its business, depends quite as much upon the volume of traffic secured as upon the absolute price charged. It was further seen that certain lines of business were of such a character that little or no movement could be obtained at high rates, while a great deal could be had if the rates were made low enough. This was found to be the case with many cheap articles of common use—above all, with coal; also with stone, lumber, or even food products. A reduction of rates on these articles had the further advantage that it stimulated business in such a way as to give the railroads more of other articles to carry. Thus a change which would have been ruinous if applied to the whole system, was found highly advantageous in many instances. The principle was not merely applied in favor of certain classes of business, but in favor of the long-distance traffic in general. The old system of tolls, by which certain rates per mile were charged, was absolutely prohibitory to most long-distance traffic. For

instance, a rate of three cents per ton per mile, which was usual thirty years ago, would make it cost about a dollar a bushel to get wheat from Chicago to New York. To reduce rates suddenly on all traffic might have proved ruinous. What they actually did was to reduce rates where there would be an increase in the volume of business to make up for it. This marked the abandonment of the crude idea of tolls, and the substitution of the principle of making rates to develop business.¹

The actual effect of this change was a general reduction of rates (at almost every point), combined with vastly increased efficiency on the part of the railroad system.² Unfortunately its action has been unequal, producing frequent instances of hardship and of abuse. These abuses have been sometimes so flagrant, as to call forth serious attempts to return to the old system of tolls. The system of making rates to develop business, or of "charging what the traffic will bear," rightly applied, has been the means—and we shall find it to be the only possible means—of securing efficient service and low rates. It has been so abused and misunderstood by all parties as to have become a synonym for unchecked extortion—a pretext for charging what the traffic will *not* bear.

Between 1850 and 1880 rates were reduced on an average to about one half their former figures, in spite of the advance in price of labor and of many articles of consumption. A variety of means were made to contribute to this result. The inventions of Bessemer and others, by which it became possible to substitute steel rails for iron, made it profitable for the railroads to carry larger loads

¹ The change began independently in several countries—particularly England, Belgium, and the United States; but it has been carried farther in the United States than anywhere else.

² Compare chapter vi.

at a reduction in rates. Improvements in management increased the effective use of the rolling stock, while the consumption of fuel and the cost of handling were diminished. By other changes in railroad economy it became possible to compete for business of every kind, with the best canals or with natural water-courses. The railroad rates of to-day are but a small fraction of the canal charges of two generations ago; while in volume of business, speed, and variety of use there is an inestimable advance.

When the Austrian Government, fifty years ago, regarded railroads with dislike as being of a revolutionary nature, it judged rightly. Improved communication has played havoc with the European system of Metternich and of the Holy Alliance. The diffusion of intelligence by the post-office and the telegraph has forced the most conservative authorities to move. The rush of travel has broken down the passport system. The extension of trade is forcing us into unity of money, weights, and measures. It has prevented each nation from settling its own problems by itself. The land rents which lie at the base of the social order in England are threatened by changes in the production of wheat in Dakota or Nebraska. Chicago and Calcutta are virtually nearer to one another to-day, in all matters of business, than London and Vienna, not to say London and Paris, were a century ago. The policy of protective tariffs is but a slight obstacle to international trade. Cheapened transportation more than counteracts it.

We no longer produce for the home market, but for the world's markets. It is by the world's supply and demand that prices are made. The development of transportation has been the main instrument of this change. It has gone hand in hand with the extension of the credit sys-

tem; each has supplemented the other. The bill of lading is made to serve the same purpose as the bill of exchange. The movements of international trade are helped forward by telegraphic transfers of money. Transactions which would formerly have taken months to complete are now settled in half an hour. In one sense, time, money, and risk are spared. Yet the very possibility of doing all these things so smoothly is the most powerful stimulant to speculation, and creates more risks than it annuls.

If it becomes possible for me to sell my goods in markets five thousand miles distant, it becomes possible for a hundred other producers in a dozen different parts of the globe to do the same thing, and compete with me at almost every point. Of the conditions under which my competitors are working I can judge but imperfectly; of the mistakes which they are likely to make, I can hardly judge at all. No one producer can judge of the aggregate supply and demand of the world. If a few reckless producers make a mistake, it means not merely local over-supply, but over-supply in every market, a fall of prices everywhere. The ruin of a few drags down all the rest into cut-throat competition. In this over-production, real or apparent, railroads are not merely the instruments, but also the sufferers. The causes which lead to increased prices and increased production, lead to the multiplication of railroads beyond all reason. When prices fall, railroad charges have to be reduced to unremunerative figures in order to retain any business at all. And railroads have not the refuge, available in most other lines of business, either of contracting their capital or of driving their competitors out of business. A railroad once built is come to stay. It can neither retire from business voluntarily, nor be forced

to do so by any other competitor. Drive it into bankruptcy, and it only fights the more strongly and recklessly. The railroad is thus at once the instrument and the extreme sufferer, in the speculation, over-production, and commercial crises of the present day.

The concentration of industry in large cities is directly connected with improved transportation. When roads were the chief means of transportation, the size of cities was limited by the available supply of food. Railroad enterprise has so widened these limits by its express services for milk, fruit, or vegetables, and its cheap long-distance movement of grain or meat, that there is practically no such restraint felt. But there has been much more than a mere removal of barriers. Reference has already been made to the inequality of railroad rates. This inequality always operates in favor of large cities. The reduction in rates was made under the stress of competition. It was made first and fullest where competition was sharpest. Even in those countries in Europe where the state owned many of the railroads, but feeble opposition was offered to this tendency during the years 1850-1872. In England and the United States it was pursued with utter recklessness.

The aggregation of business in cities, of itself gives the large establishment an advantage over the small dealer. The latter has no longer a local custom of which he is sure. His personal attention to details begins to count for less. His competitor's large capital and wide connection count for more. Too often, mere unscrupulousness in business may seem to count for most of all. The small capitalist and the independent workman are crushed out. The distinction of employers and employed becomes more sharply drawn. The workman can no longer confidently

hope to become the employer of his own labor. It is these tendencies which give force to the agitation in favor of socialism. Unfortunately the effect of the policy of most of our railroads is to intensify these tendencies. They do not merely favor cities; they favor individual producers. The largest or most unscrupulous concern gets the best rates. Differences are made which are sufficient to cripple all smaller competitors, and sooner or later drive them to the wall, and concentrate industry in a few hands.

What makes things seem worse is that in this matter, as in speculation, the railroad is not merely an instrument fostering monopoly; it is itself an example of the tendency toward monopoly. Railroad consolidation has put the control of the country's business into the hands of a few large corporations. The owners may be numerous, the actual managers are few. It is useless to strive against this tendency. Consolidation lowers rates and makes enlightened economy possible. It usually lessens the specific abuses of power. But the power itself is vastly increased; while the owners are at the same time removed from all apparent contact or sympathy with the communities whom they serve. Serious conflicts of interests concerning a turnpike or bridge were almost impossible, because those who owned them and those who used them were to a large extent the same, or, at any rate, came in personal contact. But where one set of men own a railroad and another set of men use it, the two only coming in contact through the medium of the railroad management, we have a state of things corresponding to the "absenteeism" of Irish landlords, and involving conflicts or dangers of the same kind.'

¹ Iowa Railroad Commissioners' Report, 1884, pp. 5, 6.

This condition of things became obvious about 1870; and it is against these evils and dangers that subsequent legislation has been almost entirely directed. The years 1870-3 are marked by a change in the aims of railroad legislation, more obvious perhaps than the change in principles of railroad management twenty years earlier. A noticeable thing about the changes of legislative aim was the suddenness with which they made themselves felt all over the world. Hitherto the object had been to secure rapid increase of railroad facilities. With this end in view England allowed the utmost freedom from restriction; the United States granted almost reckless subsidies of land, or guaranteed bonds; on the continent of Europe some states gave direct pecuniary assistance to private companies, other states built railroads themselves. The main object was support rather than control. The most they feared was that charges in general might be too high, and this they sometimes sought to prevent by law. That the community might be injured by the reduction of some charges more than others, scarcely entered the minds of the majority of legislators and statesmen. The very worst forms of discrimination were given by state railroads themselves, apparently without suspicion of harm.

The reaction was sudden and widespread. In the years immediately following 1872, the Granger movement did its work in the United States; the Railway Commission was established in England; Belgium and Prussia determined to change from a mixed system to a system of state ownership pure and simple; France and Italy began a policy—eventually unsuccessful—of state purchase and management. The general object was the same in every case. Hitherto legislation had been conceived from the

standpoint of the investor—whether that investor was a private company or the state itself, mattered little. Hence-forward things were looked at from the standpoint of the shipper, and especially of those shippers who under the old system were being driven to the wall.

It can hardly be doubted that the reaction was a healthful one in itself. It is still more certain that it was often carried to an unfortunate extreme. It is safe to say that a large part of the railroad legislation of the last twelve years could never be carried out at all, and that a large part of the remainder would do more harm than good to all concerned. The attempt to legislate for the shippers without regard to the railroads is as much of a mistake as the attempt to legislate for the railroads without regard to the shippers. To reconcile these two interests—apparently conflicting and yet mutually dependent upon one another—is one of the most serious problems of modern business or modern politics.

CHAPTER II.

THE GROWTH OF UNITED STATES INTERNAL COMMERCE.

Badness of early means of communication—Construction of turnpike roads—National aid to internal improvements—The Cumberland road—Water routes—The Erie Canal—Other canals—First experiments in railroad building—The Baltimore and Ohio—Railroads about Philadelphia ; in the South ; in New York ; in Massachusetts—Development of railroads in New England 1840–1850 ; in the Central States 1850–56—Land-grant roads before and after the war—Successive periods of speculative railroad development—Different aspects of railroad history.

Tenth Census of the United States, 1880, vol. iv.

Introduction to Poor's " Manual of Railroads of the U. S." 1881.

M. Chevalier : " Histoire et Description des Voies de Communication en Amerique." 3 vols. Paris, 1840. This was an excellent work in its time. An American authority of about the same date is H. S. Tanner : " Canals and Railroads of the United States."

P. F. Kupka : " Die Verkehrsmittel in den Vereinigten Staaten von Nordamerika." Leipzig, 1883. A mere compilation, but containing much good material.

One hundred years ago the United States had no system of transportation. Except on natural water-courses it had very little transportation of any kind. The roads were built by local authorities for local purposes—and badly built at that. Wagon conveyance was slow and expensive. It took a week to go from Boston to New York by stage, and nearly three weeks to reach Charleston. Although this was the most frequented route, there was only a tri-weekly mail at best. The postal service was irregular and unsafe. Passenger journeys were attended with discomfort, and not infre-

quently with danger.¹ Long-distance freight movement was absolutely impossible. The charge for hauling a cord of wood twenty miles was three dollars. For hauling a barrel of flour one hundred and fifty miles it was five dollars. Either of these charges was sufficient to double the price of the article and set a practical limit to its conveyance. Salt, which cost one cent a pound at the shore, would sometimes cost six cents a pound three hundred miles inland, the difference representing the bare cost of transportation.² It was on these cheap articles of common use that the charge bore most heavily. It forced every community to live within itself. To what extremes it was carried is shown by the whiskey insurrection of 1798. The settlers of Western Pennsylvania had no manufactures of their own. They depended upon the East for all such supplies, and could only pay for them by the produce of their farms. Grain in its natural state was so bulky that the cost of transporting it across the Alleghanies was simply prohibitory. Distilled into whiskey, its bulk was far less in proportion to its value, and the cost of transportation correspondingly less. The tax upon whiskey was to them a tax upon their sole exchangeable product, and threatened to deprive them of all commerce with the outside world. Had there been no improvement in the means of transportation, this piece of history must have repeated itself.

Three successive improvements were introduced in the next generation: turnpikes, canals, and railroads.

Turnpike roads marked an advance, not merely because they were better built, but because they were built to accommodate through traffic. The early roads had

¹ MacMaster: "History of the People of the United States," i., 52-68.

² "American State Papers," vol. xx., p. 919.

been administered by local authorities—the townships in New England, the counties elsewhere. The system was taken from England. But in England it had broken down a century and a half ago, and had been supplemented by a system of "turnpike trusts"—that is, the trustees were empowered to borrow money to build such roads, and were empowered to charge such tolls as would suffice to pay the interest on the investment, and gradually to pay off the principal also.¹ In other words they were built by bonds without stock. In America they were usually built by stock without bonds—that is, turnpike companies took the place of turnpike trusts, and no attempt was made to pay up the principal. This was on the whole an improvement on the English system.

The first American turnpike was built in 1790. The system developed first in Pennsylvania, then in New York and Southern New England. South of the Potomac it took practically no root. On the whole the State of New York seems to have carried out the system most completely. Several of the States—notably Pennsylvania, and later, Kentucky—gave subsidies to turnpikes.² Up to 1822 Pennsylvania had paid nearly two million dollars, or over one thousand dollars a mile in this way—about one third of the total cost.

On the whole these roads seem to have paid a fair return on the investment, and to have given reasonable satisfaction to the public. In spite of rather high tolls, they so reduced wear and fatigue of movement, as to cheapen transportation, in many cases nearly fifty per cent.

The subject of national aid to roads was first vigorously

¹ *Edinburgh Review*, April, 1864.

² Kupka, pp. 6-8.

taken up by Gallatin in 1808, and again by Calhoun in 1818.¹ It was argued by Gallatin that the money spent on roads would be far more than saved in transportation expenses; so that if you put a moderate duty on imported goods and spent this revenue on roads, the cheapened transportation would lessen the average price of goods more than the tariff would raise it. Gallatin, who was Secretary of the Treasury at the time, put the whole matter on economic grounds; Calhoun, ten years later, took up the matter as Secretary of War, and argued the subject on the grounds of military strength. But the actual decision of the question was based on political grounds rather than on economic or military ones; and in this aspect it was taken up by the party opposed to Gallatin and Calhoun. There were three reasons for the Whig support of a policy of national aid to internal improvements: first, it tended to bind the country together; second, it increased the constitutional functions of the United States; third, it seemed to furnish additional reasons for a high tariff. The second was the main point contended for. President Monroe, in 1822, vetoed a perfectly unobjectionable, and indeed unimportant, bill for repairs, simply to assert his opposition to the constitutional principle involved; but he afterwards changed his mind on this very point.

Gallatin's original plan contemplated an expenditure of from sixteen to twenty million dollars. He proposed—first, a line of road parallel to the coast, extending from Maine to Georgia; second, a system of lines—road or canal—connecting the navigable waters of the coast with those of the Mississippi valley; third, three long roads radiating from Washington, leading to Detroit, St. Louis,

¹ "Amer. State Papers," xx., 724-921; xxi., 533.

and New Orleans. Needless to say no such plan was carried out. Numbers of bills for national aid to roads were introduced, and some of them were passed ; but they were mere individual pieces of work, forming no part of any general system. There was a great deal of talk, and very little direct action. President Jackson's opposition at the critical point was too strong to be overcome.¹

The one really important tangible result of all this agitation was the Cumberland Road—the "National Pike" from Washington to the Mississippi River. The original bills (1806-8) provided for a road from Cumberland to Brownsville, furnishing direct and easy communication between Washington and Wheeling. In the course of the next twenty years provision was made for successive extension to Columbus, Vandalia, and Jefferson City. The last section was never completed. The total expenditure up to 1837 was four million three hundred thousand dollars.²

The road system as a matter of national importance is a thing of the past. The system of internal water-routes is a thing of the present in more senses than one. When no longer used, its influence is still felt, because it has laid down the lines of the country's development.

The stream of emigration flowed from the Hudson, the Susquehanna, or the Potomac, toward the great lakes on the one hand, or the Ohio and the Mississippi valley on

¹ The constitutional point was evaded by a distribution of the surplus among the States. A great deal of United States money was thus actually spent on internal improvements. For the broader political aspects of the question, see Alexander Johnston's article "Internal Improvements," in Lalor's "Cyclopedia of Political Economy," Chicago, 1881-84. For details, see E. G. Bourne's careful investigation of the "History of the Surplus Revenue of 1837." New York, 1885.

² H. R. Reports, 1836-37, iii., 850. For a description of travel on this route, see *Harper's Magazine*, Nov. 1839.

the other. The southwestern movement was at first more important than the northwestern. Pittsburg and Cincinnati, the two main points of transhipment on this route, had become important business centres, while Buffalo and Cleveland were the merest frontier settlements. Of this southwest movement, Philadelphia was the natural starting-point. After the beginning of the present century, the road from Philadelphia to Pittsburg was fairly good. The construction of the National Road farther south does not seem to have seriously threatened Philadelphia's advantage of position.

The change came from another quarter, with the substitution of canals for roads. The advantage was now to lie not with the short route, but with the level route. And the level route ran through New York State. From Alabama to New York the chain of the Alleghanies is all but unbroken. In New York on the line of the Erie Canal it is almost completely broken.

The first man who really foresaw the future of canal communication was George Washington. Even before the Revolution he called attention to the possibilities of a canal westward from the Hudson; although his main efforts, both then and afterward, were directed toward the establishment of communication on a line much farther south, from the Chesapeake to the Ohio. It was at first supposed that the canal would run to Lake Ontario instead of Lake Erie. A company with this object in view was formed in 1792. It did some rather ineffective work and then became bankrupt. In 1808 the State bought out whatever remained of this company; in 1810 the Erie Canal commission was appointed with De Witt Clinton at its head. An effort was made to secure national aid; but Madison was unfavorable to the project,

and the War of 1812, for the time being, put a stop to all action. At the close of this war New York wisely decided to go on with her own resources, without asking national aid. Clinton was the life of the whole movement. His "Appeal" was published in 1816. Work was begun July 4, 1817. The middle section was completed in 1819; the Champlain branch in 1820; the eastern section in 1822. The whole was finished in 1825.¹ The cost had been five million seven hundred thousand dollars.

Probably no one event in the history of the United States was hailed with such universal rejoicing. And the usefulness of the canal more than justified expectations. Wherever it met a natural water-course, a city grew up rapidly—witness the rise of Syracuse, Rochester, and Buffalo. The receipts from canal tolls, \$762,000 in 1826, had nearly doubled in 1833. A reduction in rates of about forty per cent. in 1834 so increased business that the total receipts continued to grow almost as rapidly as before. In 1836 arrangements were made for deepening and widening the canal in such a way that the transportation itself was cheapened. In spite of constant reductions in rates, the canal fund grew so rapidly, that in 1845 the managers of this fund were buying up their bonds at twenty per cent. premium. In 1852-3 the tolls per ton were only about one third their original figures; the revenue was over three million dollars in each year. From that time forward begins the history of contests between canal and railroad. The use of the canal continued to increase; its receipts at one time also increased largely; but its commercial power slowly diminished. From 1853 to 1859 there was a fight for supremacy between canal and railroad. For twelve years more there was a contest for profits. Then it became a

¹"Tenth Census," iv., 731, 732.

question whether the canal could pay expenses of maintenance; a question which was finally decided in the negative.¹

The construction of the Erie Canal reduced transportation charges to little over one tenth their former figures. Branches were built in rapid succession. The low rates enabled it to compete for the traffic of the Ohio River valley. Two canals connecting Lake Erie with the Ohio were built in the years 1825-38, one starting from Cleveland, the other from Toledo.

Apart from the Erie Canal and its connections, the first canals were those for coal transportation. Some were built in Pennsylvania as early as 1813. The Lehigh Coal and Navigation Company began its activity in 1818-21. The Delaware and Hudson Canal dates from 1826. The Morris Canal was begun about the same time. More general activity was first called forth in the years 1830-37. The Pennsylvania system of public works established a "composite route" of canal, railroad, and stationary-engine service, which did useful work in its time, though quite unable to compete with modern railroads. The canals of Virginia were unsuccessful; those of Indiana flagrantly so. Some of the worst of these works were more or less directly encouraged by subsidies from the United States.²

The crisis of 1837 put a complete stop to speculative canal building. For the time being it was impossible to continue these works at all; and when the country had in some measure recovered, it was felt, in the first place, that

¹ See chapter vi. For details see successive N. Y. State reports of the Auditor of the Canal Department, the State Engineer, and special commissions.

² Besides the distribution of the surplus (see Bourne, "History of the Surplus Revenue of 1837"), there were 4,000,000 acres of land granted to canals or in aid of canal construction.

these systems of public works had done more harm than good ; and, secondly, that the chief means of internal communication was not to be water, but rail. Some local canals, chiefly coal canals, continued to be of service to local traffic. Two great systems of water communication—the Lakes and Erie Canal on the north, the Mississippi River on the south—have continued to wage a more or less equal contest with the great railroad systems of the present day. The history of these contests belongs to a subsequent chapter.

Before the canal mania reached its height, railroad building had begun almost simultaneously at half a dozen different points. The idea took root most suddenly. There had been no such previous series of experiments with horse railroads as in England. The Quincy tram-road¹ (1827), by which stone was hauled for the Bunker Hill Monument, is hardly important enough to be noted as an exception. Of somewhat greater importance were the Mauch Chunk Railroad, completed in the autumn of 1827, and the Carbondale and Honesdale, built by the Delaware and Hudson Canal Company, and opened in 1828. The first locomotive seen in America was imported from England for the use of this road.² But these roads, and one or two others immediately following them, were built for special purposes rather than for general public use.

The honor of taking the lead in the construction of a full-fledged railroad may fairly be given to Maryland. The Baltimore and Ohio was really the pioneer railroad. It was chartered in 1827 and begun in 1828. The first

¹ Adams : " Railroads," pp. 37-39.

² It did not serve its purpose. W. H. Brown : " Hist. of First Locomotives," pp. 74-92.

section, fifteen miles in length, was opened in the beginning of the year 1830. Horse-power and even sails were at first tried as means of propulsion. It was not until the latter part of 1831 that steam was definitely chosen for the motive power.

The early railroads were like modern street railroads in their construction. That is to say, instead of having transverse sleepers, they were laid upon heavy wooden beams or sills, placed lengthwise. These beams were the real supporting power; the rail was simply a flat strip of iron, to protect the underlying wood from wear. The first locomotives, imported from England, were found too heavy to be borne by a road thus constructed. There was also much delay in their arrival. America almost immediately began to manufacture her own locomotives; the West Point Foundry Works taking the lead in this matter.¹

By the close of the year 1835, the Baltimore and Ohio with the Washington branch had attained a length of one hundred and fifteen miles. Pennsylvania had been in some respects still more active, her railroads, chiefly coal roads, having attained the highly respectable length of about two hundred miles²—one quarter of the whole mileage of the United States at the time. South Carolina had one hundred and thirty-seven miles open for traffic; Massachusetts, New York, and New Jersey, not far from one hundred miles each. The remaining roads were chiefly in Virginia. Railroad extension was not seriously checked by the crisis of 1837. In one sense it may have been helped rather than hindered; for as the building of new canals was given up, the necessity of new railroads was all the more apparent.

¹ Brown: "Locomotives," 145, 159 ff.

Including some private railroads not mentioned in the United States Census returns.

The most rapid growth centred around Philadelphia. To the northwest was a system of coal roads. The first of them were mere private lines connecting mining properties with points of shipment by water. In 1833 the Philadelphia and Reading Railroad was chartered; it was opened in 1838. Farther to the south, directly west of Philadelphia, was a line of State railroad opened in 1834. This was part of the composite route already mentioned. The Pennsylvania Railroad itself was not chartered till 1846. The west end of the Camden and Amboy route was opened as early as 1832-34. Regular communication with New York was established in 1839. A year before this the Philadelphia, Wilmington, and Baltimore Railroad, chartered in 1831-2, had been opened to Baltimore.¹

The Baltimore and Ohio advanced but slowly after 1835. More activity was displayed farther South. By the year 1840 there seems to have been a continuous line of rail open from Fredericksburg *via* Richmond to Wilmington. The first section built—that between Petersburg and Weldon, thirty-one years later the object of such hard fighting,—was opened in 1833. South Carolina had been still more enterprising. The Charleston and Hamburg Railroad, one hundred and thirty-seven miles in length, was chartered in 1829. When opened in 1833 it was the longest line of railroad under one management in the world. A number of branches were built in the years succeeding 1840; while Georgia was developing a well-planned system of railroads under State ownership. State aid in various forms was quite prevalent in the South at this time; the

¹ These and subsequent figures are obtained by a comparison between the historical matter in Poor's "Manual" and "History" (New York, 1860), and the returns in the Tenth Census, iv., 301-387 (bottom figures).

policy had been stimulated if not started by the distribution of the surplus in the United States Treasury. In Georgia and South Carolina it was done with profit and success. Elsewhere it was not so well applied.¹

The earliest New York railroads were built near Albany. The Mohawk and Hudson (Albany and Schenectady) was opened in 1831; the Saratoga and Schenectady in 1832; the Rensselaer and Saratoga in 1835. The New York Central route was opened to Utica in 1836, and to Buffalo, by a somewhat devious line, in 1842, though the consolidation of the different sections did not take place till eleven years afterward. Meantime the Harlem Railroad had been opened, and many other roads were well under construction, notably the Erie, which had received liberal assistance from the State. The main line of the Erie was, however, not opened through its whole length till 1851.

Three Massachusetts railroads from Boston toward Providence, Worcester, and Lowell respectively, were opened almost simultaneously in 1835.² The whole line of the Boston and Albany was completed in 1842. This railroad has the distinction of being the first road operated as an important *through* route, and not merely supported by local traffic. It was not the only instance of continuous railroad connection. There was already an almost continuous line from New York to North Carolina. A rail connection from Albany to Buffalo was on the point of completion. But each of these was simply a succession of local lines managed for local interests, while the Boston and Albany was built with some conscious idea, though an imperfect one, of the work that it was to do in the future.

¹ Bourne: "History," chapters vi.-xi.

² Adams: "Railroads," pp. 52-79.

The years 1840-1850 formed a period of rapid railroad construction in New England—more rapid than it was in any other section of the country during that decade, and more rapid than it has been in New England during any subsequent decade. If we look at the railroad map of the United States in the year 1850, we find that the New England system has developed its main outlines; that the Middle and South Atlantic States have seized the idea of their lines of development, but have not as yet carried it out, while the States of the Mississippi valley are just making their first experiments in railroad construction. In Ohio, part of the Cincinnati, Sandusky, and Cleveland had been built about 1837. But it had for a long time stood alone. It was not until 1848 that through rail communication, by any route whatever, was secured from Cincinnati to the lakes.

After the year 1850, railroad construction in New England diminished, while in other parts of the country it increased rapidly. The Middle and South Atlantic States in the next seven years filled out the skeleton of railroads which they had previously possessed. The group of States east of the Mississippi in the same period laid down the main lines of its subsequent development. The Cleveland, Columbus, and Cincinnati line was opened in 1851; the Cleveland and Pittsburg in 1852. In the same year the Michigan Central and Michigan Southern lines were both opened. The connecting link between Cleveland and Toledo was opened in the next year, furnishing through rail communication to Chicago. In 1854 this was extended westward as far as the Mississippi *via* the Chicago and Rock Island. The Chicago and Galena, the nucleus of the Northwestern system, was opened in 1855, followed in quick succession by the Chicago and Alton;

Chicago, Burlington, and Quincy; and Illinois Central. The Ohio and Mississippi, from Cincinnati to St. Louis, was opened about the same time. The first line to reach the Missouri was the Hannibal and St. Joseph in 1858.

The rapid extension of railroads in the West and South at that time was favored by the policy of land grants.¹ The Illinois Central was the first railroad aided in this way, although such grants in favor of roads and canals had not been uncommon in the time preceding the crisis of 1837. The Illinois Central scheme was first proposed as far back as 1836; but it was not until 1850-51 that it received its land grant; similar grants being at the same time made to Mississippi and Alabama in behalf of the Mobile and Ohio Railroad. The example was followed only too speedily in other States; in 1852 in Missouri, in 1853 in Arkansas, in 1856 in Michigan, Wisconsin, Iowa on the one hand, in Florida and Louisiana (besides additional grants in Alabama and Mississippi) on the other. The sectional interests of North and South were played off against one another in this scramble for spoils. Eight million acres were granted under Fillmore, nineteen million under Pierce.

The crisis of 1857 put an effective stop to new railroads, especially in the West; and land-grant projects ceased at the same time. The war then stopped railroad building still more completely. But instead of stopping land grants, it gave them a new field and a wider scope. Before the war these grants, with unimportant exceptions, had been made to the States and by them to the railroads. Now began a system of direct grants of territorial lands on a scale hitherto unknown. A railroad to California

¹ Forty-sixth Cong., 3d Sess., H. R. Ex. Doc., 47, part iv. (Report of the Land Commission).

was a political necessity, to be obtained at almost any price. The Union¹ and Central Pacific railroads received what was virtually intended as a money subsidy of over twenty-five thousand dollars a mile, and land grants aggregating over thirty million acres. The Northern Pacific failed to get an expected money subsidy, but received instead, just before the close of the war, a double allowance of land—forty-eight million acres in all. With the restoration of peace, the urgent political necessity ceased, but not the grants of land. New grants were made in the Northwest, on a scale exceeding that of ten years before. In the South the forfeited grants were renewed, and new ones added. In the extreme Southwest new routes to the Pacific were richly endowed. Where gifts of lands were impossible or insufficient, towns and counties, in East and West alike, vied with one another in subscribing to the securities of new railroads. For the upper Mississippi valley in particular the years 1868–72 were the years of rapid railroad development

The causes which led to the crisis of 1873 and the depression which followed it, the speculation of the years 1880–82, and the crisis of 1884, must be treated elsewhere.² Railroad extension in the five years 1874–78 was confined within as narrow limits as possible. In 1879 it began to revive; and the four succeeding years did for the Southwestern States and for the Rocky Mountain region what the years 1869–72 did for the upper Mississippi valley. The increase in these groups during four years was 126 and 168 per cent. respectively; while in the country east of the Mississippi it was only twenty-four per cent.³

¹ On the history of the Union Pacific Railroad at this period, see J. B. Crawford: "The Credit Mobilier of America." Boston, 1880.

² Chapter iii.

³ For detailed history see *Railroad Gazette*, 1884, pp. 568, 586.

These years will undoubtedly be remembered as the period of the building of the great trans-continental routes, which had been chartered in the earlier period of speculation, but, with the exception of the Central Pacific, had been forced to await the second wave of speculation before they could be completed.

The mere external history is but the smallest part of any account of railroad development in the United States. The internal history of railroads, their organization and management, presents problems of far deeper interest and importance. There are distinct questions affecting the relations of railroads to their owners, to one another, to their patrons, and to the government.¹ They have been rapidly developing side by side, in one sense independent, in another sense closely connected. They involve some of the most serious problems of modern industrial life. To understand the relations of railroads to their owners, we must study the growth of corporations, the modern forms of speculation, the history of commercial crises. In the relations of railroads to one another and their patrons, there are involved not merely questions of trade geography, but questions of industrial principle, of competition and combination, of monopoly and its effects. And finally, in the relation of railroads to the government, there are political questions involved which have already become important, and which are destined to be of far greater importance in the immediate future.

¹ In this enumeration we have omitted an equally important class of questions, which lies outside of the scope of this book—the relations of railroads to their employees, which are barely touched upon in chapter vii. To treat them with the thoroughness which they deserve would require a book by itself.

CHAPTER III.

RAILROAD OWNERSHIP AND RAILROAD SPECULATION.

Distinctive features of railroad business—Corporate ownership—Its present extent—Past history—Good and evil connected with it—Speculation—Commercial crises—Events preceding the crisis of 1884—Speculative railroad building and its results—Attempts to control it—Railroad accounts—The income account and the general balance sheet—Difficulty of separating maintenance from construction—How far railroad reports can be serviceable to the investors.

UNTIL about 1850, it was assumed that railroad business was subject to the same laws as any other business, and in particular to the so-called law of competition, by whose free action rates would be brought down to cost of service. It was gradually seen that this assumption was not strictly true; that in many instances it was very far from the truth.

A railroad differs from many other business enterprises, in the existence of a large permanent investment, which can be used for one narrowly defined purpose, and for no other. The capital, once invested, must remain. It is worth little for any other purpose than the one in question. A railroad cannot contract its capital merely because it does not pay; nor can it be paralleled at short notice when it happens to pay remarkably well. In these respects it differs quite sharply from a bank or store; and, to a certain extent, from a factory. The different lines of business—bank, store, factory, railroad—form a series, at one end of which we have an elastic business capital,

which can be readily expanded or contracted, while at the other end we have a large permanent investment of "fixed" capital, which cannot thus adapt itself to the wants of trade. This is why it is so often said that the ordinary laws of political economy do not operate in the case of railroads.¹ The early political economists were for the most part men who had made a special study of banking business. David Ricardo, the man who did more than any one else to give English political economy its present shape, was himself by profession a banker. He was thus led to treat capital as something not fixed, but freely circulating, which could be at once withdrawn from a business when it became unprofitable. In the case of a factory this is by no means true; in the case of a railroad it is absolutely untrue.

This large permanent investment necessarily affects the relations of a railroad to its owners, to its users, and to the law. It is owned, almost of necessity, by a corporation. As concerns the users, it is almost necessarily a monopoly. Very few points have the benefit of more than one line of road; even at these points it is often easy to come to an agreement. In all these cases, competition is not directly felt. When a railroad makes arbitrary rates, whether justified or not, there is no appeal to any controlling influence. The attempt is therefore constantly made to bring the railroads under the authority of special legislation. There is no lack of grounds on which to base such special action. Corporate existence in itself renders a certain amount of legal control necessary. Common carriers have from time immemorial been made subject to special responsibility. When a single carrier, or a very few of them, have a virtual monopoly of the whole

¹ Adams: "Railroads," p. 81.

business, this responsibility needs to be still more strictly enforced. This was the doctrine of the United States Supreme Court in the Granger cases, in which the reserved police power of the State was so strongly asserted.¹ The railroads themselves recognize their peculiar position under the law, in claiming to exercise the right of eminent domain to take land without the owner's consent. If they get the benefit of their character as a "public use," they must accept the drawbacks which that character involves.

Finally, the chief practical reason why so much special legislation is directed against railroads, is that we are dealing with a new business, without the benefit of established precedents in its favor. The public is jealous of the railroad power. It will not allow it to manage its business without interference, because it is afraid that it will grow so strong that all interference will be impossible. The public sees no limit to the growing power of corporations, and it regards this growth with a kind of vague fear. This fear is none the less potent because men are at a loss to tell exactly what they are afraid of. It gives rise to much wild talk, and some ill-judged legislation.

These manifestations drive some men to the opposite extreme. Because the fear is vague, they insist that it is groundless. Because the talk is wild, they insist that it is much ado about nothing. Because the legislation is ill-judged, they insist that no legislation is needed.

Either extreme is bad. It is not well to be frightened at the growth of corporate power; but it is not well to shut our eyes to the plain fact of the case. Not far from one quarter of the wealth of the United States is held by trading corporations. It is not improbable that half the permanent business investment of the country is owned

¹ *Munn vs. Illinois*, 94 U. S., 113.

in this way.¹ It is certain that, not in the United States only, but in the whole civilized world, corporate property is increasing many times faster than other forms of wealth.² It is safe to say that, amid the many important business changes of the present century, this sudden growth of corporations is the most important.

So rapid has been the change that men's thoughts have been hardly able to adapt themselves to it; still less has the law been able to keep pace with it. The change has brought evils and dangers, previously unknown, and even now imperfectly understood. Against these dangers, old safeguards have proved useless; new legislation, based on a merely superficial view of the facts, has proved worse than useless. If our remedies are to be of any avail, they must be based on a thorough understanding of the evils against which they are directed. To understand the evils, we must understand the character of the system, and the causes which have led to its growth.

The distinctive feature of the modern trading corporation is the limited liability of its members.

¹ Using the words "permanent investment" in a somewhat narrow sense, to exclude the value of land itself—which though a permanent investment on the part of many individual holders, is from the standpoint of the community mostly capitalized rental value. The wealth of the country as estimated in the United States Census of 1880, vii., p. 11, is found to be forty-three to forty-six thousand million dollars; probably from sixteen to eighteen thousand million should be classed as permanent investment. It is probable that on this basis of valuation the total amount of corporate property amounted to ten or twelve thousand million dollars, about three fourths of which should be classed as permanent investment. But these figures are very uncertain.

² Here we stand on surer ground in making our estimates. It is not probable that in the years from 1870 to 1880 the total wealth of the world increased much more than ten per cent. But the use of machinery, as indicated by the consumption of coal and iron, increased from forty to fifty per cent.; and the railroads of the world increased seventy-five per cent. See Mulhall: "Balance Sheet of the World, 1870-1880"; Neumann Spallart: "Uebersichten," 1884, pp. 266-289, 439.

This is what distinguishes it from a partnership.¹ If a man puts a thousand dollars into a partnership, and the firm contracts debts in excess of its resources, he may be called upon to pay many thousands more to satisfy the claims of creditors. But if he puts his thousand dollars into railroad stock, he is quit of all further responsibility. His liability is limited to the amount of his original investment. If the company is well managed he will get his dividends. If it is badly managed he will probably lose his money. But in no case can he be compelled to pay more than the face value of his stock subscription. If the liabilities of the company exceed its resources, that is the creditors' look-out. They can take possession of the concern and run it to suit themselves; but they have no further claims against the individual stockholders.

What is true of railroad stock is generally true of manufacturing stocks, and partially true of the stock of banks and other trading corporations. The liability of the individual stockholders is in each case accurately defined by law.

In this respect the corporations of to-day are sharply distinguished from those of the middle ages. The member of a mediæval guild did not lose one jot of his liability for what the corporation might do. His whole personality was bound up in the corporation. He ceased to have an individual existence apart from it. John Smith, A.D. 1300, was not, primarily, a citizen of England, but a member of the guild of smiths in the city of London, which city was a member of the English body politic. Whether he wrought or fought, he did it not as a free-born Englishman, but as a Smith of London. Any analogy between the mediæval guild and the modern corporation

¹ This is of course not intended as a legal definition (compare Taylor on Corporations, chaps. iii., iv.,) but as a popular statement of facts.

is almost always misleading.¹ The former was an association asserting its claims in every direction while the state was still weak. The latter is an association established for specific purposes by a state which has become strong enough to protect the association in its privileges, and to limit it to the purposes for which it was organized.

The first corporation of the modern type was a bank chartered at Genoa, in 1407, for the purpose of funding the national debt of that city.² The next important instances were the great merchant shipping companies of Holland, England, and France, of which the English East India Company has been the most famous. The first of these was chartered about the year 1600. This form of organization grew in public favor for a hundred years. Then the wild speculations connected with John Law's bank in France in 1720, and the "South Sea Bubbles" in England, at the same date, produced a reaction, and the development of corporate business was checked until after the close of the Napoleonic wars. Their really rapid growth dates from 1815.

There is a necessity for such corporations in the nineteenth century which did not exist in the eighteenth. The development of the steam-engine has caused large enterprises to take the place of small ones. The era of large factories began about 1815; that of railroads in 1830. In two generations we have seen an investment of over \$30,000,000,000 in applied steam power.³

The work was indispensable,—but where was the money

¹ J. E. Thorold Rogers: "Six Centuries of Work and Wages," London and New York, 1884, pp. 106-113.

² F. Kleinwächter in Schönberg's "Handbuch der politischen Oekonomie," pp. 197, 198. Tübingen, 1882.

³ Engel: "Zeitschrift des Konigl. Preuss. Stat. Bureaus" (Berlin), 1880, p. 121.

to come from? The largest fortunes of half a century ago were inadequate to meet the demands of the factory and railroad systems, even if their owners had been inclined to take the whole risk of these untried enterprises. On the other hand, the small capitalists needed just such a chance of investing their savings, provided it could be done without undue danger. The investment needed the small capitalist, and the small capitalist needed the investment. The problem was solved by applying the system of limited liability to all these undertakings. The modern form of corporation prevailed because it was found to be the best form of ownership for the large permanent investments under concentrated management which are required in modern industry.

This result was not reached off-hand. Many people were violently opposed to the new system. It gradually forced itself into public favor, because the communities which refused to adopt it got very little good and a great deal of harm from their refusal. The laws of Massachusetts sixty years ago were unfavorable to joint-stock enterprise. Capital was thereby driven into other States for investment. The growth of Massachusetts business was hindered, and its character was not really helped. The final result was that the laws had to be modified.¹

The case of England was still more marked. In the reaction from the speculations of 1720 the principle had been adopted that limited liability should be granted only by special charter from Parliament. The result was an infinite amount of expense and jobbery at this point. Whether an enterprise received its charter, depended

¹ Angell and Ames on Corporations (9th Ed., Boston, 1871), pp. 607-610. Amer. Jurist, 4, 307. For the history of the "General Railroad Law" see chapter vii.

quite as much upon the skill of its lobbyist as upon the soundness of its prospects. The smaller undertakings could not go to the expense of securing special charters. Too often they were thus thrown out of the hands of *bona fide* investors, and into the hands of those who, having little to lose, had little to fear. Speculation was thus fostered by the laws which were meant to restrain it. One after another these laws had to be repealed.¹ Some of the obnoxious provisions still remain; but the failure, in 1878, of the City of Glasgow Bank, which was organized under the old system, gave the death-blow to that system. Hundreds of small investors were irretrievably ruined; and this fact did more than any amount of talk would have done to show the folly of sending the investor to the poor-house in order to protect the creditor from any loss whatsoever. The small investor is a necessity of modern industry; and the modern form of corporation has been found the one available means to encourage and protect him. The fact that it was adopted reluctantly makes the proof of its necessity all the stronger.

In laying stress upon the necessity of corporations in their present form, we do not pretend that they have been productive of unmixed good. On the contrary, their growth has been attended with evils and dangers at every step.² There are evils involved in the existence of large permanent investments of any kind. There are other evils involved in the corporate ownership of such investments. Some abuses are connected with the business management of a railroad or a factory, simply because it *is* a railroad or a factory; others are due to the fact that it is owned and managed by a joint-stock com-

¹ Kleinwächter, pp. 201, 202.

² Simon Sterne: "The Corporation: Its Benefits, its Evils." New York, 1880.

pany. The former cause is more important than the latter. Many of the evils attributed to joint-stock ownership are due to the character of the enterprise rather than to the way in which it is owned, and show themselves just as strongly in enterprises of the same kind which are owned and managed by individuals. Some of these evils affect the general public. Others more directly affect the investor. It is with the latter class that we are at present concerned; a class of evils which may be included under the somewhat vague name of speculation.

Speculation, in the narrowest sense of the word, is the attempt to make money out of fluctuations in the value of property, as distinct from its earnings.

In a wider sense, speculative business is that business which involves large risks for the chance of large gains.

In a still wider sense, speculative management is the management of property by inside rings for purposes distinct from the permanent interests of its owners.

To the first of these forms of speculation, corporate property is liable, in common with almost all other property. To the second it is specially liable, because large permanent investments involve special risks. To the third it is still more specially liable, because the mass of owners have no direct voice in its management.

Each of these forms of speculation always goes on to a certain extent. But there are times of comparative rest; and, on the other hand, times when speculation develops an unusual and abnormal activity. A time of active speculation is almost always followed by a more or less severe reaction. It is this reaction which constitutes a commercial crisis.¹ This alternation between unhealthy activity

¹ There is a decided lack of literature on the history of commercial crises. The best book is Max Wirth: "Geschichte der Handelskrisen," Frankfort,

and depression, this ebb and flow of the industrial life, constitutes one of the most serious problems with which the political economist has to deal. The moral evils of the period of speculation, and the material evils of the crisis, are alike fraught with danger to the community.

Legislation is of little avail against these evils. The causes which produce them lie beyond the sphere of effective state interference. Legislation against commercial crises is about as effective as legislation against chills and fever. You may provide good sewage by public authority; but it rests with the individuals whether they will bring themselves into proper connection with the system. If you legislate too much, you may so weaken individual responsibility as to do more harm than good. Once let the idea go forth that it is the duty of the state to take care of everybody, and everybody will cease to take care of himself.

There is another difficulty with such attempts to limit speculation by law—the impossibility of separating the bad from the good. Speculation is a necessity of modern life. Modern business involves large risks; some one must take them. The important thing is that the risks should be taken by men with judgment to foresee the probable effects, and property to stand the possible strains; and that men who lack the judgment and the property should not take the risks.¹

It rests with individuals to learn the lessons of each crisis, and protect themselves, as best they can, from a

1874. W. M. Grosvenor : "American Securities, etc., from 1872 to 1885" (issued too late for detailed reference) is an important addition to our authorities on this matter. See also article "Commercial Crises," by Horace White, in Lalor's Cyclopaedia, vol. i.

¹ See article "Speculation," in Lalor's Cyclopaedia, vol. iii., and the references there given.

recurrence of the same evils. The crisis of 1857 taught us the folly of business based on speculative banking. That of 1873 taught us the folly of land speculation, and of stock speculation in some of its grosser forms. It taught the business men of the country to look forward to the possibility of a sudden panic, and guard against its effects.

But the conditions which preceded the present crisis were radically different from those of 1873 or 1857. There was almost no speculative banking. There was a noticeable absence of land speculation. Most remarkable of all, the crisis of 1884 has thus far been attended by no general panic of the first rank, though we stood on the verge of one in May of that year. There has been no crash at any one point, but a steady sinking all along the line. Men who were prepared to weather a sudden storm, however severe, have found it impossible to resist this steady downward tendency, month after month.

All these things, which we had been accustomed to consider necessary precursors of a crisis, were conspicuous by their absence. The conditions which did exist, and which seem to have most to do with causing the present crisis, were, first, an unprecedentedly rapid expenditure of capital for railroads and other permanent investments, and, second, a system of business methods which rendered it easy for inside rings to manipulate the market for their own purposes. It is important to analyze the workings of these causes, especially the first.

After the long period of depression following the crisis of 1873, the year 1879 witnessed a revival of confidence. The volume of business increased decidedly; there was a general advance in prices, and in some lines—iron production, for instance—where the old facilities could not be at once increased to meet the new demand, an extraordi-

narily rapid advance. Good wheat harvests in the West, combined with an active European demand, caused this expansion of business to continue through the years 1880 and 1881.

Any increase of price, or even of volume of business, means a far greater proportionate increase of net earnings. If the price of \$30 a ton on pig-iron gives a profit of \$5, a sudden increase to \$35 will give a profit of about \$10. An increase of 17 per cent. in the price would thus make a difference of 100 per cent. in the profit on the transaction. If new capital could at once come into competition, such profits could last but a few weeks. But it takes time to build a successful furnace, factory, or railroad. Those who were already in the business had, for the time being, a partial monopoly, which they strengthened by pooling arrangements.

The years of expansion were years of large return to the owners of the old investments. A large part of this increased return was not spent on luxuries, but re-invested. Another large mass of money for re-investment was set free when the United States Government called in its bonds. These two causes created an active demand for good investments. The prices of all good securities went up so high that it was impossible to obtain satisfactory rates of interest. In the desire to obtain old rates of interest, capital sought new investments.

A new permanent investment is almost necessarily speculative. But investors did not look at the matter in that light. Men who would not have thought of taking risks to secure ten per cent. instead of six per cent., took worse risks to avoid the reduction from six per cent. to five per cent. If an investment promised but six per cent. interest, they thought it *prima facie* sound.

If it was in the form of a first-mortgage bond, it seemed *prima facie* secure. Only a small part of the stock speculation was of the first form. There was a great deal of unconscious stock speculation of the second form; and this opened the way for the third and worst form of speculation, which was practised on a large scale.

In the three years 1880-1882 we built 29,000 miles of railroads, an addition of thirty-four per cent. to the railroad mileage of the country. Not more than one third of these were justified by existing business. Another third, perhaps, were likely to be profitable at some future date, or at any rate to be of real service to the community; but not now. Of the remainder, some were built to increase the power of existing systems, where they were not needed and not likely to be needed on their own account. Some were built to put money into the hands of the builders, as distinct from the owners. Some were built to sell, as a blackmailing scheme against other roads.

To make money out of the building of a railroad, it was only necessary to subscribe the small sum requisite for obtaining a charter, with the right to issue first-mortgage bonds. The original subscribers would then have at their disposal whatever funds the bondholders might furnish. They could pay themselves a good commission for selling the bonds. They could then organize as a construction company, and contract to pay themselves a high price for building the road. These are but two means among many which afforded them an opportunity of transferring the bondholder's money to their own pockets in their double capacity as directors and contractors.¹

¹ Hassler, C. W.: "Railroad Rings, and Their Relation to the Railroad Question in this Country." New York, 1876.

In other cases, rather less frequent, the *bona-fide* stockholders were

This was not the worst. When the money came out of the bondholders' pockets, the bondholders were in some sense responsible for being duped. Sometimes the money came out of the pockets of the stockholders of rival roads, who were in no sense responsible. Some roads were built because they could so injure existing roads by competition as to force those roads to buy them out. The system of receiverships, originally intended as a protection to investors, has been carried to a point where it tends to the furtherance of schemes like these. Such was the character and purpose of many of the recent railroad projects.¹

The rest of the story is soon told. Insolvent themselves, they dragged their solvent competitors down to their own level. The causes which in 1879-'81 had operated to produce an advance, soon passed away. The natural decline, which at best would have cut down the profit of the permanent investments, found some of them loaded with a weight of new debt, and many of them struggling against the reckless competition of insolvent rivals. This is where we stand to-day. What has been true of railroads has been true of other forms of permanent investment. First, high charges and high profits. Then speculative investments in the same line. Next, an overstocked market, and no profit at all. Finally, cut-throat competition and widespread insolvency.²

saddled with a load of debt and other fixed charges out of which the inside ring could make its profit.

¹ Compare the detailed history of the West Shore Road, as given in *Bradstreet's*, April 25, 1885.

² The *Railway Age* (Chicago) publishes at the beginning of each year a really valuable table of mileage and capital of railroads sold under foreclosure in the series of years preceding. In the years 1876-1880, while the crisis of 1873 was working out its full effect, nearly a quarter of the railroad mileage of the country was thus foreclosed or reorganized.

To the community, the present crisis is a lesson on the folly of reckless investment. Over-production, of which we hear so much, is a small matter compared with this. Mere over-production can be remedied in a few months. Over-investment means lasting over-production till the investment itself is worn out, or till the business of the country slowly grows up to a higher point. Our present crisis is directly connected with ill-judged over-investment. The folly of investors provoked it; the inclination of managers favored it; the knavery of rings was able to make a profit from it.

Under the stress of this experience, a great many favor limitation of railroad construction.¹ Whether this can ever be effectively carried out is more than questionable. That it would be desirable in many cases, there can be no doubt. But it is not easy to introduce a principle so foreign to the general tendency of our laws; and it may be questioned whether any advantages gained at one point would not be dearly purchased at another. The whole matter will have to be settled on practical grounds; and it is not easy to predict which way the balance will incline. Of this there can be no doubt: that it is desirable to limit the facilities for constructing railroads with other people's money.² Yet even here the practical en-

¹ Kirkman, M. M.: "The Relation of the Railroads in the U. S. to the People and the Commercial and Financial Interests of the Country." Chicago, 1885. Also an able review of this pamphlet in *The Nation* (N. Y.), xl., 133.

Compare the recommendations of N. Y. State R. R. Commissioners in each of their reports thus far issued.

² J. B. Hodgskin, in *N. Y. Nation*, xii., 398, on "The Borrowing Power of Corporations."

This is the most serious evil connected with the system of stock-watering. Stock-watering has three forms: 1. Where new stock is issued to represent money which, instead of being paid out as a dividend, is used in improving

forcement of any law is more difficult than would at first sight appear.

To individuals, whatever else the present crisis may teach, it teaches: 1. That the evils of speculation are not avoided by avoiding its first and most obvious forms. 2.

the property. 2. Where new stock is issued to represent an actual increase in the earning capacity and market value of the property, so that the par value shall represent as nearly as possible the real value. 3. Where stock is issued to give certain parties control of the road without actually risking any thing like the amount of money represented by the par value of their shares.

The second is on the whole the commonest form. It is resorted to for two reasons: either to equalize the share of the stockholders of different roads in a consolidation, or else to furnish an excuse for paying higher dividends than the law or public sentiment would otherwise allow. Any such evasion of the law is a bad thing in many ways. But the immediate effect is not as bad as is commonly supposed; for, as we shall see in a subsequent chapter, the attempt to keep rates down by limiting dividends defeats its own purposes; and the fact that such a limitation of dividends is evaded, therefore makes very little difference to the shipper.

The third form of stock-watering, for purely speculative purposes, is by far the worst—in fact it is one of the worst evils of its kind under which the country suffers. And it is a great misfortune that it is not more clearly distinguished in the public mind from the first and second forms. The real evils of the third form are allowed to go on unchecked, because they are not treated separately from the much less real evils of the first and second forms. The unsuccessful attempt to prohibit them all prevents any successful attempt to prohibit the worst of them.

For a somewhat different view, see Simon Sterne, in Lalor's Cyclopaedia, Art. "Railways," pp. 527, 528.

See also Report of Special Com. on R. R. Transportation of the N. Y. Chamber of Commerce, on "Watering the Stocks of Corporations," Nov. 1, 1883. The position taken in this report seems quite different from the one just advocated; but, in reality, it comes to nearly the same thing. The committee, it is true, would prohibit all three forms; but they would, at the same time so modify the law or feeling, with reference to high rates of dividend, as to take away nearly all inducement for stock-watering of the first or second forms. This is the effect and intention of proposition 6, on p. 5 of the report. This would bring the law sharply to bear against the third and worst form.

That when large quantities of capital are seeking investment, it may be as unsafe to try to avoid a reduction of rates of interest as it is at other times to take risks to secure an advance. 3. That investors are under obligations to themselves and to the community to make sure that their property is not managed for other interests than their own. The interests of the investor are the permanent interests of the property ; those of the director are often temporary, and sometimes purely personal ones. The two may readily conflict. If the permanent interests are sacrificed, it must result in ruin to the investors, and may result in commercial distress for the whole community.¹

It is in this connection that the study of railroad accounts assumes its public importance.² The fact that so few among the many owners of a railroad have any direct share in its management, makes it all the more important that its published accounts should present a true view of its financial condition. They are too often arranged to conceal the truth instead of presenting it.

The general principles involved in the published accounts of a railroad are simple. Their practical application is difficult in the extreme. We can do no more than show what these principles are, and where the chief difficulties and dangers lie.

A railroad has two ways of getting money ; it may earn it, or borrow it. It has three ways of getting rid of money ; it may spend it, invest it, or divide it. These things will generally nearly balance one another ; any difference will

¹ Herbert Spencer : " Railway Morals and Railway Policy," *Edinburgh Review*, Oct., 1854.

² Massachusetts R. R. Commissioners' Reports, 1874-1878. Kirkman : " Railway Expenditures : Their Extent, Object, and Economy," Chicago, 1880, vol. ii., pp. 1-136.

be represented by variations in the amount of cash assets on hand from time to time. The whole is summarized in the treasurer's balance sheet for the year, which includes all the financial transactions, of any sort whatever, during the time in question. The form, much condensed, is as follows:

A. B., Treas'r, in acc't with the M. and N. R. R.

DR.	CR.
Cash assets, January 1,	
1884	\$ 50,000
Gross earnings	1,000,000
Increase of debt ¹	65,000
	\$1,115,000
Expenses ²	\$750,000
Permanent investment ³	70,000
Dividends	240,000
Cash assets, Dec. 31,	
1884	55,000
	\$1,115,000

This is the fundamental account of which the others are but parts. Comparatively few railroads publish their treasurer's balance sheet; but with the aid of two successive reports of a railroad, a man moderately familiar with these matters can deduce the treasurer's balance sheet for the intervening time.

From merely looking at this account it is clear that if the item, "Increase of debt," had been made \$75,000 instead of \$65,000, the amount of dividends might have been \$250,000 instead of \$240,000, without either changing any of the other items, or destroying the balance of the whole account. In other words, the amount apparently available for dividends varies with the amount of increase of debt; and this last matter is largely under the control of the directors. Here is where most of the abuses of railroad accounting arise.

¹ Either in the form of bonded debts, notes payable, or simply bills and accounts payable. Every thing not in the form of bonds is included under the title of floating debt.

² Operating expenses, interest, rentals, and taxes.

³ New construction, equipment, etc., as distinct from mere repairs.

The matter comes up in this general form. As the facts are presented to the directors, it is found that the gross earnings of the road for the year have been \$1,000,000. The total expenditures of every kind have amounted to \$820,000, of which (say) \$700,000 have been paid, leaving \$120,000 unpaid. The treasury then has on hand \$300,000 (besides an amount of unused cash assets, materials, etc., of \$50,000, which must be kept at about that figure). If they pay up all their bills, they have \$180,000 to divide. If they pay none of them they have \$300,000. The question is, how much shall they pay?

The first impulse of most men is to say, let them pay their bills first, and then divide what is left. A closer examination shows a great many cases in which this principle cannot be applied. Suppose a railroad builds a branch line to secure new traffic. To attempt to pay for this out of current earnings would perhaps be impossible. To try to pay any considerable part in this way, would be to keep money out of the investor's pocket which had been really earned, and apply it to an extension of the business. A private individual may do this. He can readily invest his capital in extension of his own business. But a railroad manager cannot do this. He is dealing with the property of a large number of independent investors who want actually to receive whatever is really earned, and not be forced to re-invest it, whether they will or no. If a railroad man wishes to build branches, or to double his track, or to make large additions to his equipment—all of which increases the permanent investment, and probable earning capacity of the road,—he feels justified in borrowing money to pay for it. In the case in question, of the \$120,000 spent and unpaid, the theory would be to pay all that was due to current expenses, or perhaps a little more,

and borrow whatever was used for permanent investment, or perhaps a little less. The amount of earnings remaining in hand, after the current expenses have been paid, is the sum available for dividends.

They then separate the account into two parts: one, the "income account," giving the current receipts and expenses; the other, to be incorporated in the "general balance sheet" of assets and liabilities of a more permanent nature.

The income account will then read thus:

Gross earnings	\$1,000,000	Expenses.	\$750,000
		Dividends	240,000
		Surplus for year	10,000
	<hr/>	<hr/>	<hr/>
	\$1,000,000		\$1,000,000

The rest of the account is added to the general balance sheet of the previous year, thus:

General Balance Sheet, Jan. 1, 1884.

Liabilities.	Assets.
Stock	\$4,000,000
Bonds	2,000,000
Floating debt	200,000
Surplus	100,000
<hr/>	<hr/>
	\$6,300,000
	<hr/>
	\$6,300,000

To which must now be added from the year's account, every thing not included in the current earnings and expenditures, thus:

Cash assets, Jan. 1, 1884	\$50,000	New construction	\$70,000
Increase of debt	65,000	Cash assets, Jan. 1, 1885	55,000
Surplus for year	10,000	<hr/>	<hr/>
	<hr/>		<hr/>
	\$125,000		\$125,000

¹ Real estate, stock of other corporations, etc.

² Whatever a road earns, and does not spend or divide, constitutes the surplus for the year. In the income account it appears on one side, to make

The first item in this account cancels the last item of the general balance at the beginning of the year, and we then have by simple addition

General Balance Sheet, Jan. 1, 1885¹:

Stock	\$4,000,000	Construction	\$5,070,000
Bonds	2,000,000	Equipment	700,000
Floating debt	265,000	Investments	550,000
Surplus	110,000	Cash assets	55,000
	<hr/>		<hr/>
	\$6,375,000		\$6,375,000

The theory is simple enough. But there is an enormous practical difficulty in knowing what are current expenses and what are permanent investments.

A railroad has a wooden bridge which needs repair. Instead of repairing it the company substitutes an iron bridge whose first cost is much greater. How much of the cost shall be charged to repairs and how much to new construction? Or, to take a problem which was constantly coming up a few years ago: A road takes up iron rails which cost it \$50 per ton, substitutes steel rails at \$60 per ton, and sells the old iron at \$30. How shall the debits and credits be divided between the repairs and construction account? These are far from being exceptionally difficult cases to deal with.

Even with the best of intentions on the part of railroad managers, these things are hard to decide. When the

the payments balance the receipts. In that part of the account which is carried over to the general balance sheet, it must appear on the other side, to make the liabilities balance the assets. Sometimes there is a deficit instead of a surplus. Then the whole matter is reversed.

¹ The general balance sheet at any given time is really nothing more nor less than a sum of the permanent part of all previous balance sheets; the successive permanent investments on one side, the means by which they were paid for on the other.

intentions are not the best, it is easy to decide them wrongly, and hard to detect the wrong. It will quite frequently happen that the management is far more interested in having a road declare large dividends than in having its capital account on a sound basis. To declare a dividend which they have not earned, they must find a pretext for borrowing money. This they usually do by swelling the item of new construction unfairly. If they charge to new construction what really belongs to repairs, they can borrow money to pay for what should really have been paid out of earnings, and apply the money, thus unfairly saved, to swell the sum available for dividends. This is one among many ways; but it is more common than all the rest put together.¹

We have thus far treated the question from the inside point of view: The facts being given, what dividends should be or can be paid? To the general public the matter appears in a somewhat different light. A dividend having been paid, how can an outsider determine from the accounts whether it has presumably been earned? It is impossible to give a really satisfactory answer to this question. We can only call attention to a few of the more decisive indications.

We have seen that the common way of swelling dividends is to charge repairs to new construction, and borrow money to pay for it. If then we find that the sum for repairs is small, and for new construction large, and that there is a constant increase of the floating debt, there is a strong presumption against the management, and against the honesty of the dividend. It requires some technical knowledge to decide whether the amounts charged to

¹ Another way of doing the same thing, is to charge high prices for hauling the materials which a road uses in its own construction. The earnings are thus swelled at the expense of the construction account.

repairs and construction respectively are really large or small. They have to be compared both with the statistics of what has been actually done, and with previous annual reports of the same company. From one such report we can learn but little. If in a series of years we find the repairs diminishing, and the new construction increasing, without any marked change in the general condition of the road, we may be reasonably sure that something is wrong.

It is rather easier to draw these inferences now than it was a few years ago. One of the best pieces of work done by the Massachusetts Commission was on this matter of railroad accounts. In consultation with the officers of the companies, they attempted, some ten years ago, to secure a certain uniformity in railroad returns, and were so far successful that their example was followed in other States. In the years 1878-9 there was an effort made by a number of different State commissions to secure common forms of return throughout the country; and in this they were reasonably successful.

No system of accounting, however perfect, will secure the public against false original entries; nor will any amount of technical knowledge avail to detect certain forms of rascality. If a man says he has spent money for coal, when really he has put part of it into his own pocket in the form of a commission, nothing short of personal comparison between the vouchers and the quantity delivered can do more than raise an unproved suspicion. But if the evil lies not in the original entries, but in the deceptive manipulation of those entries, the requirement of a good system of returns will do much to check it, and the intelligent study of those returns will do a great deal more.

CHAPTER IV.

COMPETITION AND COMBINATION IN THEORY.¹

Different forms of monopoly—Recent growth of industrial monopolies—The law of competition as commonly stated—Cases where it fails to operate—Difference between mercantile competition and the competition of factories or railroads—Forms of combination—Pools—Labor combinations—The legal view of these matters, and its results.

H. Sidgwick: "Principles of Political Economy," London, 1883; book ii., chap. x.: "Of Monopoly and Combination."

T. H. Farrer: "The State in its Relation to Trade," London, 1883, chap. x. This chapter is condensed from an article by the same author in the *Quarterly Review*, October, 1871, entitled "Industrial Monopolies."

H. D. Lloyd: "Lords of Industry," *North American Review*, June, 1884.

Fr. Kleinwächter: "Die Kartelle: ein Beitrag zur Frage der Organisation der Volkswirtschaft." Innsbruck, 1883.

For authorities dealing specially with the subject of railroad combination, see next chapter.

Competition is the effort of rival sellers to secure a market for their goods, each striving to offer better terms than his competitors. Competition is what prevents any individual from fixing prices to suit himself, because his rivals will give lower prices, and he will get no business at all.

The opposite of competition is monopoly. Where competition does not act at all, there is complete monopoly; where it acts imperfectly, there is partial monopoly.

¹ Part of this chapter appeared in the *Andover Review*, Nov., 1884; part in the *Independent*, Jan. 29, 1885—one of a series of articles which have furnished material for chapters iii., vi., vii., and xiii.

A monopoly may be either legal, natural, or industrial.

A legal monopoly is where competition is prohibited by law. The trade guilds of the middle ages were complete legal monopolies, because no one outside of the guild was allowed to engage in the trade. The postal service is a monopoly of the United States Government, because no private individual or corporation is allowed to compete in the business of letter-carrying. Protected industries are partial monopolies, because no foreign producer is allowed to compete with the home producer on equal terms.¹

A natural monopoly is where competition is physically impossible. The water supply of large cities is often a tolerably complete natural monopoly, because the available sources of supply are so few that they will often be in the hands of a single company. It is the same way with canals and with docks, with mines, and even with lands. The land which is best available for any particular purpose is so small that the owners of other land can compete but imperfectly with the owners of the most favored spots, who can therefore exact a return for their monopoly privileges in the form of ground rent.² Rent is the price paid for the use of a natural monopoly.

An industrial monopoly is where the business interests

¹ With these exceptions there are no legal monopolies in the United States (unless patents or copyrights be thought to have that character). In times past, such monopolies were frequent. Steamboat navigation in the State of New York was for many years a legal monopoly. Efforts were made by certain railways in Massachusetts to obtain monopoly rights—not entirely without success (Adams, p. 56). Compare the history of the Camden and Amboy Transportation Co. in New Jersey.

On the continent of Europe legal monopolies are by no means uncommon at the present day.

² A large part of the monopoly of existing railroads consists in the possession of city real estate which gives them superior terminal facilities.

of the parties concerned make competition practically impossible, even when there is neither law nor natural obstacle to hinder it. And the present age is an age of industrial monopoly, however we may try to shut our eyes to the fact. We have not free competition, nor can we fairly expect to have it in the future. Instead of moving toward it, we are moving away from it. This is a fact to which people are just beginning to open their eyes. They begin to see that in a great many cases prices are determined, not by competition, but by combination. They do not yet see the real extent to which this tendency prevails. Still less do they understand the reasons why it must prevail, now and in the immediate future.

We are generally supposed to live in an age of free competition. The legal restraints upon business which two centuries ago were the rule have now become the exception. They are only in force on the national frontiers, in the form of a protective tariff against the foreigner. Within these frontiers a man is allowed to use his own judgment as to the best chance of making a living; he is neither restricted in his choice, nor supported if he makes a mistake. He must look out for his own market. None will be compelled by law to have their flour ground at his mill, or their clothes made at his shop.

Physical as well as legal hindrances to competition are passing away. The invention of railroads has made transportation ten times quicker and ten times cheaper. Two generations ago, the expense of cartage was such that wheat had to be consumed within two hundred miles of where it was grown. To-day, the wheat of Dakota, the wheat of Russia, and the wheat of India come into direct competition. The supply at Odessa is an element in determining the price at Chicago. Two

generations ago, the market-gardeners of the suburbs had a monopoly of the supply of fresh fruit and vegetables for the city ; now, fast trains bring the whole country for hundreds of miles into competition with them. Western beef now competes with Eastern beef even in the country towns of New England. Cabbages from Germany contend with cabbages from Missouri in the markets of New York. The local tradesman is no longer sure of the local trade. Mercantile houses in the city, doing business by agent or by correspondence, try to undersell the jobbers of smaller towns, or even to take away business from the country stores. Factories, which twenty years ago were not within arm's reach of one another, can now get railroad rates low enough to enable them to carry a fierce competitive war over the whole district which they supply.

The old monopolies are dead, the old barriers to trade are disappearing. But the same movement which has done away with legal monopolies, and has gone so far toward abolishing many natural ones, has created a system of industrial monopolies even more widespread and formidable. We are seeing how this tendency acts in the case of railroads in the United States. It has been no less marked in Europe. George Stephenson foresaw the future of railroad combination from the first. "Where combination is possible," he said, "competition is impossible." A few English statesmen agreed with him. The majority were either too blind to see, or too weak to act. It was only by the hardest experience that they learned the lesson ; but once learned, it was learned thoroughly.¹ On the continent of Europe, railroad combination prevailed yet more completely. On either side of the Atlantic, most persons who have really looked into the subject have

¹ See chap. ix.

come to regard railroads as a sort of natural monopoly, not regulated by the ordinary laws of trade, and needing to be closely watched by public authority.

But we are now beginning to find combination in a multitude of other cases where, until now, we have supposed ourselves to enjoy the benefits of free competition. The story of the Standard Oil Company¹ opened the eyes of a great many people. Some twenty years ago two or three men, of small capital but great business ability, got hold of a new process for refining petroleum. Their ability and their process gave them an advantage over their competitors, who found the competition ruinous, and one after another were led either to make terms with them or withdraw from the field. The result was an organized association, with a capital which ultimately reached eighty million dollars, including nearly all the refineries in the country. The association settled just what prices should be charged in each district, and there was no man who had a chance of competing with them independently. For the company, besides the power obtained by controlling an enormous capital, had come into such relations with the railroads and the pipe-lines that no independent refiner had any chance whatever. These contracts, more discreditable to the railroads than to the Standard Oil Company, were what attracted public attention to its doings. In other respects its work seems to have been good. The quality of oil has been improving, the price has been declining rapidly; it could hardly have declined faster under free competition. But the public are alarmed at the growth of such a power in their midst,—able, apparently, to dictate the price of a

¹ Among the numerous articles on this subject may be mentioned those of Messrs. Camden and Welch (*pro* and *con*) in the *North American Review*, vol. 136, pp. 181-200.

necessary of life, and subject to no restraint or control from outside. Statesmen, lawyers, and journalists held up their hands in holy horror, and exclaimed: "Can such things be?"

But the more they looked, the more they were forced to the conclusion that such things could be and had been, and are still increasing. Nearly every industry employing fixed capital on a large scale has its pool, whether they call it by that name or not.¹ The Anthracite Coal Combination has been less successful than the Standard Oil Company; but its method of crushing small rivals by denying them transportation facilities has made it almost equally notorious.² And now the system of combinations has extended to other coal regions besides the anthracite. Again, every branch of hardware, from rails to carpet tacks, has its combination to keep up prices or restrict production. The cases are only too frequent where the combination pays certain mills for *not* running more than they could earn by running. For lumber and for paper, for cattle and for milk, for cartridges and for matches,—in each business there is an organized combination, fixing rates and often limiting production.³ The waterways themselves, which, we are so often assured, are to protect us from the monopoly of the railroads, have their rates fixed and their traffic pooled by combinations of greater or less influence,—from the local barge association of some interior town to the great North Atlantic Steam Conference. How much freight each of the leading steamships is to carry is not

¹ This is not confined to America. See Kleinwächter, pp. 137-8, and elsewhere; Georges Salomon "Les Coalitions Commerciales d'Aujourd'hui." Paris, 1885.

² For a brief statement of its purposes, see Report on the Internal Commerce of the United States, 1879, pp. 179-182.

³ Lloyd, "Lords of Industry," p. 549.

infrequently made the subject of agreement with the owners of rival vessels.¹

What is to be done in the face of a system like this? Our first impulse is to say that its growth must be stopped at all hazards. We are inclined to sympathize with the anti-monopolists in demanding that the laws which have fostered abuses of this kind should be abolished or reformed. But have the laws actually fostered these abuses? It is hard to make out that they have, except in the most indirect manner; in its direct action the law hinders and thwarts them. Contracts for the restriction of trade are illegal, and the State will not enforce them; railroads feel this at every turn. The pools of to-day are not like the monopolies of past centuries, or the guilds of the middle ages, creatures and pets of the law; they arise from very different causes, and grow strong in the face of adverse legislation.

All our education and habit of mind make us believe in competition. We have been taught to regard it as a natural if not necessary condition of all healthful business life. We look with satisfaction on whatever favors it, and with distrust on whatever hinders it. We accept almost without reserve the theory of Ricardo, that, under open competition in a free market, the value of different goods will tend to be proportional to their cost of production. According to this idea, if the supply of a particular kind of goods is short, and the price therefore so high as to be greatly in excess of the cost of production, outside capital will be attracted into the business until the supply is sufficiently increased to meet the wants of the market. But as soon as this point is passed, and the

¹ See Blue Book of Select Committee on Railway Rates, etc. Evidence, 1881, qu. 14,309-14,330.

price begins to fall below cost of production, people will refuse to produce at a disadvantage, the supply will be lessened, and the price rise to its normal figure. If all this be true, competition indeed furnishes a natural regulator of prices, with which it is wicked to interfere.

It was approximately true when Ricardo wrote; but, in the business of to-day, one point in the chain of reasoning fails, and the whole breaks down with it.¹ It is not true that when the price falls below cost of production people always find it for their interest to refuse to produce at a disadvantage. It very often involves worse loss to stop producing than to produce below cost.

Let us take an instance from railroad business,—here made artificially simple for the sake of clearness, but in its complicated forms occurring every day. A railroad connects two places not far apart, and carries from one to the other (say) 100,000 tons of freight a month at 25 cents a ton. Of the \$25,000 thus earned, \$10,000 is paid out for the actual expenses of running the trains and loading or unloading the cars; \$5,000 for repairs and general expenses; the remaining \$10,000 pays the interest on the cost of construction. Only the first of these items varies in proportion to the amount of business done; the interest is a fixed charge, and the repairs have to be made with

¹The early political economists dealt chiefly with banking business, where the circulating capital was large and the fixed capital comparatively small. For such business their theory was true enough. But in the business of the present day—and especially in railroad business—the theory is far from representing the real facts of the case. Economists are far from perceiving the full difference between their assumptions and the reality. F. A. Walker and others have shown how the law of competition fails to act smoothly in practice. Adolph Wagner shows how its action produces bad results. But they ought to go much farther. In the case of industries with large permanent investment, the law is not merely imperfect or bad in practice, it is false in theory.

almost equal rapidity, whether the material wears out, rusts out, or washes out. Now suppose a parallel road is built, and in order to secure some of this business offers to take it at 20 cents a ton. The old road must meet the reduction in order not to lose its business, even though the new figure does not leave it a fair profit on its investment; better a moderate profit than none at all. The new road reduces to 15 cents; so does the old road. A 15-cent rate will not pay interest unless there are new business conditions developed by it; but it will pay for repairs, which otherwise would be a dead loss. The new road makes a still further reduction to 11 cents. This will do little toward paying repairs, but that little is better than nothing. If you take at 11 cents freight that cost you 25 cents to handle, you lose 14 cents on every ton you carry. If you refuse to take it at that rate, you lose 15 cents on every ton you do not carry. For your charges for interest and repairs run on, while the other road gets the business.

If it be objected that such a case could not occur in actual practice, the answer is that it does occur constantly, and almost as a matter of course when the competing road is bankrupt. "Business at any price rather than no business at all," is the motto of such a road. It has long ceased to pay interest; it can pay for repairs by receiver's certificates; and it will take freight at almost any price which will pay for the men to load the goods and the coal to burn in the engine. And be it observed that when a competing road does not carry the war to this point, it is not a competitive rate. They may agree upon a 25-cent rate, thinking that it will be a reasonable and at the same time a paying one; but such a rate is actually determined by combination, even though they take cost of

service into account. Ricardo's theory was based upon the assumption that when payment fell below cost of service active competition would cease. His theory fails, because, far below the point where it pays to do your own business, it pays to steal business from another man. The influx of new capital will cease; but the fight will go on, either until the old investment and machinery are worn out, or until a pool of some sort is arranged.

The railroad may serve as a type of modern business. Wherever there are large permanent investments of capital we see the same causes at work in the same way.

In the year 1870 the Philadelphia price of No. 1 pig-iron averaged \$33.25 a ton, which probably represented just about the cost of production, including a fair return on the investment. The American product for that year and the next was about 1,900,000 tons each. But through 1871 and the greater part of 1872 prices were rising; the average for September, 1872, was \$53.87. Large profits like this attracted capital into the business; the product for 1872 was 2,855,000 tons, and for 1873, 2,868,000 tons. So far, Ricardo's theory worked well. Then prices dropped faster than they had risen. December, 1873, they were \$32.50 a ton; December, 1874, they were \$24.00. For the year 1878 they averaged but \$17.62.¹ But the iron men could not restrict their production as fast as they had increased it. To allow their furnaces to go out of blast was to allow their business to go to ruin. They continued to produce at a great loss, and to fight more desperately the greater the loss became. Some concerns succumbed, some pulled through to see more prosperous times. But for a period of six years millions of tons of

¹ Reports of James M. Swank, Sec'y of the American Iron and Steel Association.

iron were produced and sold below cost, their owners being thankful if the price paid would cover raw materials and wages, without any regard to interest or renewal. The same thing is probably true of the steel-rail business to-day.

There is a marked difference of principle between mercantile competition, such as Ricardo had in mind, and the competition of railroads or factories, such as we have been considering. In the former case its action is prompt and healthful, and does not go to extremes. If Grocer A sells goods below cost, Grocer B need not follow him, but simply stop selling for the time. For: 1. This involves no great present loss to B. When his receipts stop, most of his expenses stop also. 2. It does involve a present loss to A. If he is selling below cost, he loses more money the more business he does. 3. It cannot continue indefinitely. If A returns to paying prices, B can again compete. If A continues to do business at a loss he will become bankrupt, and B will find the field clear again.

But if Railroad A reduces charges on competitive business, Railroad B must follow. 1. It involves a great present loss to stop. If a railroad's business shrinks to almost nothing, a large part of its expenses run on just the same. Interest charges accumulate; office expenses cannot be suddenly contracted; repairs do not stop when traffic shrinks; for they are rendered necessary by weather as well as by wear. 2. If B abandons the business, A's reduction of rates will prove no loss. The expense of a large business is proportionately less than that of a small one. A rate which was below cost on 100,000 tons may be a paying one on 200,000. 3. Profitable or not, A's competition may be kept up indefinitely. The property may go into bankruptcy, but the railroad stays where it

is. It only becomes a more reckless and irresponsible competitor.¹

The competition of different stores finds a natural limit. It brings rates down near to cost of service, and then stops. The competition of railroads or factories finds no such natural limit. Wherever there is a large permanent investment, and large fixed charges, competition brings rates down below cost of service. The competitive business gives no money to pay repairs or interest. Sometimes the money to pay for these things comes out of the pockets of other customers, who do not enjoy the benefit of the competition, and are charged much higher rates. Then we have the worst forms of discrimination. Sometimes the money cannot be obtained from any customers at all. Then we have bankruptcy, ruin to the investor, and—when these things happen on a large scale—a commercial crisis.

There is but one way to prevent these results. If competition is ruinous to all parties, all parties must stop competing. If it finds no natural limit, it must be artificially limited; it must end in combination. And the moment you have established an effective combination, you have introduced the principle of monopoly. You have determined prices not in open market, but by an agreement among all the sellers.

This agreement may take any one of four forms. 1. Agreement to maintain rates. 2. To divide the field. 3. To divide the traffic. 4. To divide the earnings. The last three are commonly known as pools.

The first is the simplest, but least effective. There is

¹ Adams, pp. 148, ff. Testimony of E. D. Worcester before the Hepburn Committee, p. 1074; of Albert Fink, p. 564. The counter-argument of Mr. Blanchard, pp. 3033-34, does not hold generally, because in a fight of this kind recklessness is the most important element of strength.

scarcely an organized industry where the dealers do not meet and settle upon a schedule of rates and discounts, agreeing that no one shall sell below these prices. Such agreements are rarely kept. It is for the interest of all that rates in general should be maintained; but it is for the interest of each concern to secure business for itself by not quite maintaining them. This constitutes a great temptation to depart from schedule prices; a temptation all the stronger because it is so easy to violate the agreement indirectly, and so hard to detect any such violation. The result is apt to be a system of underhand competition, worse in many respects than the open competition which existed before there was any agreement at all.

This is why it is found necessary to divide the business among the different competitors, by a pooling agreement. Such agreements are hard to arrange. There is almost always a dispute about their terms. But as long as they are in force, it is hard to violate them without actual fraud, and it is comparatively easy to detect such violations and deal with them severely.

When it is possible to "divide the field" this course is usually the simplest. We see it illustrated where different gas or water companies parcel off the different districts of a city to one another; or where manufacturers in different cities agree to leave one another in undisturbed possession of the home market. We see it not infrequently in agreements between railroads. But in the majority of cases this arrangement is impracticable, and the rival concerns agree upon the proportion of business which each is to do. The companies in the Anthracite Coal Combination have arranged how much coal each company may mine. Factory combinations determine how much each concern may manufacture. Railroads

agree just what percentage of competitive traffic each road shall carry.

When one railroad receives more than its agreed share of business, it is generally inconvenient to send the goods by a rival route, and easier to arrange matters by a money payment.¹ This brings us to the fourth and closest form of combination, where there is a division of earnings. The machinery for securing this division may have any degree of organization up to the point of actual consolidation of the competing interests.

The dangers of a pool lie in the arbitrary power which it places in the hands of a few men to deal as they will with the business of the country. Even granting that the actual abuses of combination are less than those of competition, it seems like taking refuge from the excesses of democracy in an enlightened despotism. There is some slight truth in the analogy, but we are likely to carry it too far. Combination does not produce arbitrary results any more than competition produces uniformly beneficent ones. We hear a great deal said about charging "what the traffic will bear"; and the man who avows this as his principle is compared by anti-monopolists with the robber barons of the middle ages. He is represented as fleecing a helpless public out of all its hard-won earnings. In the proper meaning of the principle the case is just the opposite. Charging what the traffic will bear is a very different thing from charging what the traffic will *not* bear. It is a hard principle to apply intelligently; but when it is thus applied it adjusts the burdens where they can be best borne, and develops a vast amount of business which could not otherwise exist. Our railroad management has many

¹ For the question of traffic *vs.* money pools, see Fink: Argument before the Select Committee of the U. S. Senate, May 21, 1885., pp. 33-35.

faults and abuses in detail; but, taking its work as a whole, it has brought down rates to a cheapness which is unequalled elsewhere, and has developed the business of the country on a scale which would have been impossible under any system of rates based on cost of service. Nor does it leave the door open for inordinate profits. The moment a combination places its figures so high as to do this, other capital will seek investment in the same line; and though these new investments are apt, before long, to come into the pool at the old rates, yet they have cut down the profits by their entrance. An amount of business which would richly support one railroad or factory, yields but a scant income to two railroads or factories at the same rates. Witness what the "Nickel Plate" Railroad has done for the Lake Shore, or the West Shore Railroad for the New York Central. Parallel roads do not lower rates permanently, but they make havoc with profits. It is usually far-sighted policy for a combination to put its rates so low as not to tempt new capital too rapidly into the field. If that lesson is learned, the public gets the benefits of competition without its disadvantages. Unluckily, we place these combinations outside of the protection of the law, and by giving them this precarious and almost illegal character we tempt them to seek present gain even at the sacrifice of their own future interests. We regard them, and we let them regard themselves, as a means of momentary profit and speculation, instead of recognizing them as responsible public agencies of lasting influence and importance.¹

There is another aspect of our subject, still more serious than any we have yet treated, which we can do little more than touch upon,—the competition and combination of

¹ See chap. vii. Grosvenor: "American Securities," pp. 200-214.

labor. Labor is in the market, like any commodity; its price is largely determined by competition, and this too often takes the form of cut-throat competition. A workman working for starvation wages is like a factory or a railroad running for operating expenses. In flush times the workman gets comparatively good wages; he marries, and is able to support a family in reasonable comfort. This family becomes a fixed charge upon him; and it is of the utmost importance to society that he should be able to meet his fixed charges in this respect. But a commercial crisis comes, and the demand for labor diminishes. Men who have no family to support come into direct competition with him. He can better afford to work for what will keep body and soul together than not to work at all, even though his wages are brought so low that his children perish for lack of the food which should give them strength to resist disease. And so wages are brought down to the starvation minimum, only to rise above it after long years of waiting and misery. The workman seeks relief in combination; but combination is far harder for him than for the capitalist. Where there are ten factories to combine, there may be ten thousand workmen to be held together,—not to speak of the almost unlimited floating labor supply which may be brought in at any point. The law will not help him. If the law regards the pool with disfavor, it regards most of the manifestations of trades-unionism with absolute hostility.¹ No wonder that our workmen try to change the law; no wonder they call for special statutes against labor importation; no wonder that they seek to limit the supply in the market by a universal eight-hour law. Whether

¹W. S. Jevons: "The State in Relation to Labor," London, 1882, chapters iv., v. J. E. Thorold Rogers: "Six Centuries of Work and Wages," London (and New York), 1884, pp. 398, 399.

rightly or wrongly, we do not here inquire; it is beyond our purpose to discuss what general improvement is practicable in this field. We only call attention to the close relation between the two problems of starvation wages and bankrupt competition. If capitalists and workingmen can but see this analogy, it may help them to an understanding of one another's position.

The socialists, in spite of their unpractical proposals, have the merit of seeing the close relation between these two problems. They would solve them by organizing the whole world into a vast system of pools and trades-unions, under the charge of the State. This is not a rhetorical figure; it is a statement of what the proposals of many of them distinctly mean.¹ But they ignore two overwhelming arguments against their position. One is that government action has many bad effects, even in the narrow sphere of duties which it to-day performs; the second is, that an approach to the system proposed by the socialist has already been tried and found wanting, under conditions far simpler than exist to-day. The organization of business in semi-political guilds was tried in the middle ages in a great variety of places and forms. It developed the gravest abuses, and fell with its own rottenness. And yet the socialism of the mediæval guilds had a limited object, which was far easier to attain than any general amelioration of the working-classes. The guilds cared only for those who were engaged in handicraft. They wanted to keep craftsmen's wages high. The great land-owners wanted to keep agricultural wages low. Towns and lords, between them, did all they could to prevent any one from entering a craft, and to keep him

¹ Gronlund: "The Co-operative Commonwealth," Boston, 1884, pp. 129, 145, and elsewhere.

in agriculture. The effects of this legislation upon the rural laborer were outrageous, and he could do nothing to help himself. The guilds were organized ; for any one else, the least attempt at organization was a crime.¹ The English combination laws, which, down to the present century, were so infamous, were made to prevent agricultural laborers from enjoying the benefits which were granted to their oppressors. In France and Germany, under the old régime, the case was worse than in England. It can hardly be too much to say that ninety-nine hundredths of all the state interference of this kind has been class legislation, and that any apparent prosperity at one point, which it has induced, has been dearly purchased at another.

While the experiments in state socialism have been so often bad, there has been a tendency in a great many cases to go too far to the opposite extreme, and to call every thing bad which restricted competition in any way. Courts and legislators have tried to stop the growth of industrial monopoly by shutting their eyes to industrial facts. They have tried to prohibit such combinations altogether, the courts saying that they would not enforce contracts in restraint of trade, the legislators trying to render it illegal to make such contracts.

They could not stop such combinations, because they were a necessity of business. The result of trying to prohibit them was what always happens when you try to prohibit a necessity ; the worse features of the system were intensified. Secret combination was substituted for open ; short-sighted and arbitrary policy was encouraged. By prohibiting the whole system, the courts deprived themselves of the power of dealing with specific evils, such as secret favors, or arbitrary discriminations.

¹ Jevons, pp. 33, 34.

In Europe, and especially Continental Europe, the case is different. They prohibit most of the specific evils strictly and effectively. But they do not prohibit pools. They recognize them as a necessity. The railroads owned and managed by government themselves enter into pooling arrangements with those of private companies with which they come into competition. With all the police power which the German Government controls—a power a hundred-fold greater than any thing we have in this country—and with all its dread of irresponsible combinations, it sees that pools are not a thing which can be prevented, and that the only way to control them is to recognize them as legal, and then hold them responsible for any evils which may arise under their management.¹

The sooner we reach the same conclusion in America, the better for all parties concerned. The attempt to bury the difficulties by thrusting our own heads into the sand has already lasted too long. We must face the inevitable as inevitable, and do the best we can to regulate it. To meet the difficulties successfully will be a hard problem. But to evade them has proved an impossible one.²

¹ See chap. xiii. See also *R. R. Gazette*, 1884, p. 636.

² T. M. Cooley: "Popular and Legal Views of Traffic Pooling." Chicago, 1884. This pamphlet, originally published as an article in the *Railway Review*, is a work of great value.

In the case of *The Central Trust Co. vs. The Ohio Central Railroad Co.*, the U. S. Circuit Court has just rendered a decision enforcing pooling contracts under certain circumstances. Both the decision itself, and the argument of Mr. Stevenson Burke, are worthy of careful attention.

CHAPTER V.

COMPETITION AND COMBINATION IN PRACTICE.

Early railroad consolidation—Scott—Vanderbilt—The trunk-line systems—Railroad geography of the United States—Means of handling through traffic—Fast freight lines—Advantages and disadvantages—Struggles for competitive traffic—Railroad pools in the West ; in the South—Trunk-line wars—Contests between cities—Arrangements made in 1877-79—Effect upon water routes—Railroad war of 1881—Principles involved—Present state of affairs.

Charles Francis Adams, Jr. : "Railroads and Railroad Questions," New York, 1878, pp. 148-213. (Also issued under the title "Railroads, their Origin and Problems.")

Reports of Joseph Nimmo, Jr., Chief of the Bureau of Statistics, on the Internal Commerce of the United States—especially that for 1879.

Report of the Special Committee on Railroads, appointed under a resolution of the N. Y. Assembly, Feb. 28, 1879.

This is commonly known as the Hepburn Committee Report. The 5,000 pages of testimony form by far the best authority on certain matters of railroad management which has ever appeared in print. The most valuable part is the testimony of G. R. Blanchard, who represented the management of the Erie Railway. Mr Blanchard's other utterances on the subject are also important.

Albert Fink's successive reports and arguments before legislative committees furnish material of the highest value. For many other authorities dealing more or less directly with this subject, see next chapter.

THE principles dealt with in the last chapter have been developed at some length, because they are necessary to any true understanding of recent railroad history, or to any intelligent judgment on matters of railroad legislation.

It is only in the last few years that they have become thus important. The earlier railroad combinations could

be easily understood without them. These earlier combinations were for the most part mere consolidations of different links into one connecting line. Take, for instance, the growth of the Vanderbilt system. In 1853 the New York Central was formed by the consolidation of what had been originally eleven railroads: Albany and Schenectady, Schenectady and Troy, Utica and Schenectady, Syracuse and Utica, Auburn and Syracuse, Auburn and Rochester, Rochester and Syracuse direct, Rochester, Lockport, and Niagara Falls, Buffalo and Lockport, Tonawanda, Attica, and Buffalo. From 1855 to 1858, the system thus formed gained control of five more roads: Rochester and Lake Ontario, Buffalo and Niagara Falls, Lewiston, Athens Branch, Niagara Bridge and Canandaigua. Then came Vanderbilt's achievements: the union with the Hudson River Railroad and the Harlem on the east; and (in some sense) with the Lake Shore and Michigan Southern, the Canada Southern, the Michigan Central, the New York, Chicago and St. Louis, on the west; the whole system including more than four thousand miles of line.

This is simply one instance among many. If we trace back the history of almost any of our large railroads we find that they were formed by the consolidation of many smaller ones. Such a course of events was a necessity. As long as railroads were purely local affairs, each locality might charter and run its own. The moment any large through traffic grew up, this was found to be a wasteful way of doing business. If they changed cars at every point of junction, the expenses were vastly increased. If they did not change cars, there was still the awkwardness of dividing responsibility, and the evil of having two separate organizations where one would do the work better.

It required no special training to see the necessity of such consolidation, and no extraordinary business talent to carry it through.

But there was a point beyond which these matters did not take care of themselves, and could only be managed by great leaders. The trunk lines of the country reached this point about twenty years ago. At that time the main routes were pretty well consolidated as far as the Ohio River or the eastern end of Lake Erie; for their through connections to Chicago or St. Louis, they made use of independent roads. The men who did most to change this state of things were Cornelius Vanderbilt and Thomas Alexander Scott. Scott began earlier and went farther; but there was a dashing quality about Vanderbilt's doings which make him the central figure in this movement.

Scott entered the service of the Pennsylvania Railroad in 1850. He was rapidly promoted and soon made his influence felt in the policy of the road. In 1860 he became Vice-President chiefly through the exertions of J. Edgar Thomson, who gave him active support in all his projects. They had already secured possession of the Philadelphia and Erie, and were busy with other schemes of the same sort, when the war interrupted all these plans. At the close of the war they were pushed on with renewed activity; the system was extended westward to Chicago, St. Louis, and Cincinnati, southward to Baltimore, eastward all over New Jersey, and northward as far as Lake Ontario. Scott himself went far beyond these limits, and was personally brought into financial trouble in 1873 in connection with the Texas Pacific. These things did not, however, involve the company, nor did they interfere with his position at its head. On the death

of Thomson in 1874, Scott was elected president and held this position till 1880, a year before his death. As a result of his policy, the Pennsylvania Railroad and its *alter ego* the Pennsylvania Company, together control nearly seven thousand miles of the most valuable railroad property in the United States.

Vanderbilt was thirty years older than Scott, but he did not go into railroad business until several years later than his rival. Through his early life he had been a steamboat captain, and in the years 1850-1860 he was one of the foremost steamboat owners in the world. But his business sagacity led him to foresee the future of the railroad system; and about the beginning of the war he gradually withdrew from the sea, to invest his capital on land. In 1863 he began buying Harlem as an investment. He bought some of it at .03; thanks to the operations of those who tried to break him down by selling it short, he carried it up to 285. He went into Hudson River in 1864; in 1867, after some opposition, he secured control of the New York Central, and consolidated it with the Hudson River Railroad in 1869. In a desperate attempt to gain control of Erie he was foiled; but he and his friends were more successful in their efforts further west, on the Lake Shore and the Canadian roads. There were thus finally united under one general management (though not under one concern as in the Pennsylvania system) some four thousand miles of railroad between New York and Chicago.

Parallel to these, but more slowly, were developed three other trunk-line systems—the Grand Trunk on the north, the Erie in the middle, and the Baltimore and Ohio on the south. The early development of these systems had been to a certain extent retarded—in the case of the

Grand Trunk by disadvantages of situation, in the case of the Erie by speculative management, in the case of the Baltimore and Ohio by the war. But though not equal in strength to the systems first named, each of these controls from two thousand to three thousand miles of line between the seaboard and the Mississippi valley. The tendency toward consolidation on parallel lines is the distinctive feature of railroad geography in this part of the country. The West Shore, the Lackawanna, the Chesapeake and Ohio, are instances of this which have come up within the last few years. Certain systems between the Lakes and the Ohio River, like the Cleveland, Columbus, Cincinnati, and Indianapolis, resist the tendency, but find it hard work to do so. West of Chicago and St. Louis the rival lines do not run parallel, but *radiate* from common centres. They reach out in all directions to collect grain for the great western markets. From Chicago we have, beginning on the north, first the St. Paul, and then the Northwestern system, each with about five thousand miles of line, then the Rock Island with fifteen hundred, the Chicago, Burlington, and Quincy with four thousand, the Chicago and Alton with about one thousand, and the Illinois Central with two thousand. These systems have grown and consolidated even more rapidly than the trunk lines. From St. Louis we have the same sort of radiation, only here one company, the Missouri Pacific, has become overwhelmingly strong, and controls six thousand miles, or, with the closely allied Wabash system, ninety-five hundred miles. Farther to the west, beyond the Missouri River, parallel lines of transcontinental traffic again take the place of radiating ones. It is, however, too soon to tell what shape these systems in the extreme West will finally take, and whether we may not have a gigantic general consolidation of all lines.

In the States south of the Potomac and east of the Ohio, the western form of railroad geography is reversed. Instead of railroads radiating *from* the central markets toward the points of production, the points of production are in the centre and the markets lie all around the edge of the district—on the seaboard, the Gulf, the Mississippi, or the Ohio. There is an inward radiation instead of an outward one.¹ In the Northeastern States consolidation has not taken place on nearly so large a scale as in other parts of the country, and especially not on as long lines. There has been consolidation by districts, rather than consolidation into extended systems.

The efforts to secure unity of management in certain details went far beyond the limits of actual consolidation. This unity was most necessary in the handling of through passengers and freight. To transship frequently, involved great trouble and expense. On the other hand, for a road to let its own cars pass on to other lines without any one to look after them, involved the danger of serious loss. The first solution tried on a large scale was to accommodate the through traffic by special cars, owned and looked after by a company which was, at least nominally, quite distinct from any of the railroads over which the cars were run. Thus there grew up sleeping-car companies, express companies, or freight-transportation companies.

In the passenger and express business, the system has continued till the present day. The express company owns the cars and assumes the responsibility to the public; it runs its cars under a contract with each railroad.² The

¹ The strongest individual system in this district is the Louisville and Nashville, which with its affiliated lines includes over three thousand miles of road.

² These contracts take the most varied forms. U. S. Census, 1880, vol. iv., pp. 594-612 (bottom figures).

sleeping-car arrangements have the same general form ; on their face they are usually more unfavorable to the railroad. But the through-freight business has gradually taken a different shape. The earliest form of fast-freight line was organized like an express company—it owned the cars, assumed the responsibility, collected all it could from the public, and paid the railroads a car-load rate very much smaller than what it charged the public. Some of these lines still exist—the Merchants Despatch Transportation Company is an important instance. But it was found that these lines afforded great opportunities for corruption. The directors of railroads would buy stock in the transportation company, and then give this company a contract which enriched it (and them) at the expense of the stock-holders whose interests were entrusted to their charge. An effort was made to avoid these abuses, by paying the freight charges to the railroads, and giving the transportation company a certain percentage as its commission. This was only partially successful.¹

A much more useful device was the co-operative fast-freight line,² which avoids the abuses of the old system, and now prevails all but universally. It avoids all stealing, because there is nothing to steal. A co-operative freight line has very few expenses, and no earnings at all. It is nothing more than a system of looking after cars and keeping accounts. The principle is this : Each road connected with the line sets apart a certain number of cars for line freight. It marks them with some distinguishing

¹ Hepburn Committee Report, p. 9, testimony (Blanchard), pp. 2959-62.

² Hepburn Committee Report, p. 8, testimony, p. 2963 ff.

Testimony before U. S. Senate Com. on Transp. Routes to the Seaboard, 43d Cong., 1 Sess., 307, part 2, pp. 360-65.

J. D. Hayes in U. S. Internal Commerce Report, 1876-77, Appendix, pp. 49-60.

color or mark, but continues to own them. Each road lets the line cars of other roads pass freely over its own track without transshipment. It collects the transportation charges on its own part of the route, no matter whose the cars may be. It reports the movements of the cars to the central office of the line. In the accounts of this office, a certain sum¹ (say $\frac{1}{4}$ cts. per mile run) is charged against the road for the use of the cars of other roads on its own line; and it is credited with a like amount for every mile that its cars have been used on other roads. The fast-freight line thus acts as a car-clearing house to settle debits and credits for the use of the cars of other roads.² It cannot be made a means of fraud, any more than a clearing-house can be made a means of fraud. It has no receipts of its own. The sum of the debit balances for one set of roads must equal the sum of the credit balances for the rest, leaving the line itself neither the gainer nor the loser. Only in case of loss or damage does the freight line receive money not due to some other road or roads; and the money thus received is, of course, paid out to the shipper. The only real payments to the line as such, are paid to be spent for salaries and office expenses. As for the line itself, it is neither a corporation nor a partnership. It is simply a set of arrangements for carrying out certain contracts between several railroads. The very agents of the line, in their dealings with the public, are responsible only for some specific road or roads, and not for the line as such.

This total absence of all possibility of cheating caused the coöperative freight line to grow rapidly in favor. The

¹ Varying according to the condition of the track—largest in the South, smallest on the trunk lines.

² The New England Car Clearing-House in Boston does the same sort of work under more complicated conditions.

Erie road reduced the expense of looking after through freight from about nine per cent of the earnings on such freight (its previous figure) to three per cent. This was done by simply changing from the old form of freight line to the coöperative form.¹

This is the great advantage of the coöperative freight line system. It also has the advantage that it causes the rolling stock to be rapidly utilized. The disadvantages of the system lie in the lack of responsibility, due to the extremely loose character of the agreements under which the freight line is managed. The absence of any power which can steal involves the absence of any power which can be held responsible for damages or abuses. The shippers feel this evil quite constantly.² The railroads themselves feel it occasionally. The through freight of a railroad may be dependent upon the discretion of the soliciting agents of a fast-freight line,—agents living perhaps a thousand miles away. These agents are responsible to no authority except that of their own roads. Yet on their uncontrolled discretion—or indiscretion—the policy and the prosperity of distant lines may become absolutely dependent. This is strongly felt in the case of great railroad wars; it is perhaps the most fruitful cause of such wars.³

Thus the very means which bound connecting roads more closely together only caused a sharper rivalry between different systems which were not thus bound. Railroad wars became more and more severe. As long as the competitive strife was merely local, it was of but

¹ Blanchard: Test. before Sen. Com. on Transp. Routes (1873), p. 364.

² Proceedings of the New York Board of Trade and Transportation, 1884, pp. 32-42.

³ For the effect of irresponsible freight agents in causing railroad wars, see Hepburn Com. Testimony, pp. 520, 522 (Fink), 3007 ff. (Blanchard).

trifling importance. When it extended over thousands of miles, and involved millions of tons of freight movement—not to say millions of dollars loss to stockholders—it became a matter of national concern. Such wars could only end in consolidation or pooling; and as the railroad systems themselves became larger, public interest in railroad pools rapidly increased.

The earliest railroad pools were probably developed in New England, but they were on a small scale, and the whole thing was often so quietly done that their very existence was almost unsuspected. The first railroad pool which has had an important public history was the Chicago-Omaha pool, established in 1870.¹ Chicago and Omaha were connected by three roads, almost exactly equal in length, and not far different from one another in financial resources. Their through business was so important that they could not afford to reduce rates to a cut-throat point. An equal division was so obviously fair that it was maintained for many years without much bickering. As long as the original conditions remained the same, there was little trouble. The pool went through the Granger movement unshaken. It was subsequently joined by other roads. Its original form was broken up in 1884, because the systems which composed it had outgrown the limits to which the old framework could be stretched. But the principle was by no means abandoned. Each year had seen it more and more widely extended. A Southwestern Association, dealing with the traffic of St. Louis as well as of Chicago, was established in 1876, and had an important though somewhat checkered career.² Pools were established from Chicago to the Ohio River on

¹ U. S. Internal Commerce Report, 1879, pp. 175 ff.

² Intern. Com. Rep., 1879, p. 174; Appendix, pp. 51, 52.

the southeast, and to Minnesota on the northwest, while beyond the Missouri they were extended to include the traffic of Colorado and other southwestern points, and finally the trans-continental traffic as far as the Pacific coast itself.

Not quite so extensive, but far more completely developed, were the pooling arrangements in the country south of the Potomac and the Ohio.¹ The competition in certain districts of the South had been even more reckless and ruinous than elsewhere. A few railroads in Georgia attempted (1873) to avoid these evils by combination. Out of this attempt grew the Southern Railway and Steamship Association. It was well managed from the first, and within three years from its organization it had come to include nearly the whole railroad system of the South and a large number of connecting or competing steamship lines. It was nominally a "net money pool," that is to say, any road carrying more than its share of the through traffic paid its rivals the excess receipts, less a certain allowance for expenses of carrying; but this allowance for expenses was purposely made too small, in order to take away from the roads all inducements to run ahead of their percentages. But the Southern Association was something more than a mere system of pooling contracts. Its object was not simply to settle what shares of competitive traffic each line should carry, but also to facilitate the handling of through traffic. This it did by establishing bases of classification, rates, etc.; but above all by the establishment (1875) of a clearing house to settle the through-traffic accounts. All these things were done after discussion by an advisory board consisting of one delegate from each railroad; but the executive officer was

¹Fink, in U. S. Internal Commerce Report, 1876, Appendix, pp. 12-24.

not bound by the opinion of the majority. The man who organized the association, and acted as its executive officer until called to a wider field of activity, was Albert Fink.

The necessity for trunk-line pools did not arise until the heavy trunk-line traffic was developed. For a long time this was relatively unimportant, because so much was carried by water. The Lakes, the Erie Canal, and the Hudson River formed an unrivalled line of transportation to the east. The Mississippi River on the south was almost equally efficient. When it cost the railroads two cents a mile to transport a ton of freight, the long-distance freight went by water as a matter of course. Only on the higher class of goods, where speed was quite as important as economy, could the railroads compete with decided advantage when the canals were open.

But a series of changes¹ made it possible for the railroads to compete for this through traffic; and the moment they undertook to do so they found it a prize worth fighting for. These wars on a large scale began in 1869, when the New York Central and the Pennsylvania each had obtained virtual control of its Chicago connection.² In 1868 rates from Chicago to New York stood at \$1.88 per 100 pounds for first-class goods, and \$.82 for fourth-class. In the summer of 1869 they fell, under the stress of competition, to a common rate of \$.25 per 100 pounds on all classes. With railroad methods as they existed at the time, such a reduction could not be maintained, and in the following years (1870-74) they were at least nominally kept at figures of \$1.00-\$1.50 for first-class, and \$.60-.80 for fourth. But in the year 1874 a new element of dis-

¹ See chap. vi.

² "Statistics Concerning the Movement of East-bound and West-bound Traffic over the Trunk Lines and Connecting Roads." New York, 1884.

turbance appeared.¹ The Baltimore and Ohio secured its Chicago connection, and almost immediately afterward the Grand Trunk began operations as a competitor on a line connecting Milwaukee and Detroit with the northern Atlantic ports. The efforts of the New York Central and Pennsylvania systems to maintain rates were rendered of no effect by the recklessness of the Grand Trunk and the offishness of the Baltimore and Ohio; while the bankrupt condition of the Erie made it almost impossible for it to pursue a conservative policy in these matters. The year 1875 was passed in feverish excitement; 1876 saw the beginning of a wild railroad war. First-class rates were quoted at 25 cts. per hundred, fourth class at 16 cts.; actual rates went much lower.

It is needless to say that railroad profits fell rapidly. But the effects went far outside the circle of railroad stockholders. The canal lost business, and the reduction of tolls which was hurriedly made could not prevent this loss.² The canal was no longer the dominant power which it once had been. And this loss of importance of the canal was a relative loss of importance to New York City. As long as the canal was distinctly the best route, the port of New York had a kind of monopoly; and the owners of the various monopoly rights used them remorselessly. High charges were imposed, vexatious and uneconomical ways of doing business were enforced. When Baltimore, Philadelphia, and Boston became competitors, traffic at those points was burdened with no such restrictions.³ Every facility was afforded for handling the through trade

¹ Adams, "Railroads," pp. 154 ff.

² Compare Fink: Rep. on Adjustment of R. R. Transp. Rates (N. Y., 1882), p. 40.

³ Hepburn Com. Rep., pp. 22-26. Compare W. N. Black: "Storage and Transportation in the Port of New York," 1884.

cheaply. Under these circumstances their commerce grew rapidly, while that of New York did not. To the fight between railroads was thus added a fight between cities, which gave new intensity to the contest.

The fight ended in 1877, not because any thing was settled, but because all parties were exhausted. As between the different cities it resulted in a compromise. Philadelphia was given a small advantage over New York in the matter of rates from the West, Baltimore a still smaller advantage over Philadelphia. That any difference at all should be allowed was a concession on the part of the New York roads; but the differences were much less than those for which Baltimore and Philadelphia had been contending.

On the part of the railroads the results were more definite. They not only stopped fighting, but they made arrangements to prevent such fighting in future by pools. Trunk-line pools had not been quite unknown¹; but they had generally been managed by outside parties² (eveners), in such a way as to intensify the abuses to which the system was liable. Now the roads took the matter in hand themselves. The division of west-bound traffic was arranged in 1877. The east-bound pooling arrangements were more complicated, owing to the number of initial points of shipment; and it was two years before they could arrange any division at all. Meantime, an associa-

¹ The Anthracite Coal Combination was the earliest instance. It was undertaken by the roads as mine-owners rather than as carriers. It was strongest in the years 1872-76. It aimed to limit production, not merely to divide it. The combination owned about 75 per cent. of the anthracite coal fields. Its measures against independent mine-owners were extremely oppressive. For dates etc., see Int. Com. Rep., 1879, pp. 179-182.

² Hepburn Com. Test. (Blanchard), pp. 3315 ff. Int. Com. Rep., 1879, p. 177. The Standard Oil Co. was the worst instance. The system of cattle eveners was as bad in principle, but was never carried out with the same power.

tion, something like that of the southern roads, had been formed by the trunk lines and their connections, under the title of the Joint Executive Committee. Albert Fink was at its head. It never attained the thoroughness of organization which there has been in the South. There was no clearing-house system, and no means of forming pooling contracts by any central authority—only by the voluntary action of the roads in each individual case.¹ We thus had three distinct sets of arrangements. 1. As to differentials between cities. 2. As to percentages of traffic between trunk-lines. 3. As to general business arrangements, rates, etc., under the Joint Executive Committee.

One result of this settlement was an increase of traffic by water. The business of the Mississippi River, stimulated as it was by the construction of the jetties at its mouth, grew enormously.² Even the traffic of the Erie Canal revived for the time being. The advantage during these years was in favor of New York as compared with Baltimore, or as compared with any other port except New Orleans. But the people of New York were not satisfied. They were displeased at what seemed to increase the arbitrary power of the railroads; and the result of their dissatisfaction was the appointment of a Committee of the New York Assembly—commonly known as the Hepburn Committee—"to investigate alleged abuses in railroad management." They brought to light abuses enough; but the general drift of the evidence showed unmistakably that the pooling system, under the administra-

¹ Hepburn Com. Testimony, pp. 3120 ff. (Blanchard).

Fink: "The Railroad Problem and its Solution," 1880.

² Internal Commerce Report, 1881, pp. 48 ff. The exports of grain and flour at New Orleans increased from less than one million bushels in 1875 to over twelve million in 1880.

tion of Mr. Fink, had lessened rather than increased those abuses.¹

Still the New York merchants believed that the existing arrangements as to differential rates did not do them justice; and the railroads leading to New York appear to have shared this belief. At any rate, the agreement was terminated in the year 1881, by action of the New York Central²; and a fierce railroad war raged for eight months afterward. It did not involve as great a reduction of dividends as has sometimes been the case, because general business was prosperous and prices were high; but the reduction in rates was very great. The railroad organization was quite powerless to stop this fight. An effort was made to have recourse to arbitration; and Messrs. Thurman, Washburne, and Cooley were appointed an advisory committee on the subject. Their report was interesting, but it settled nothing. They showed clearly enough how Baltimore claimed that rates ought to be based on distance, while New York based her claims for equality on the advantage of the New York Central in matter of grades. The committee showed the fallacy of some of these points, but they could not show any principle on which the matter should be decided.³ Meantime Mr. Fink had been studying the subject, with more definite results. If he did not solve the question, he at any rate did a great deal toward clearing it up.⁴ He showed that the violence of the com-

¹ This is candidly admitted by Simon Sterne himself, although he was professionally employed by the complainants before the committee.

² Fink: "Report on Adjustment of R. R. Transp. Rates," 1882, pp. 6, 7.

³ Report of Messrs. Thurman, Washburne, and Cooley, an Advisory Commission on Differential Rates, etc. N. Y., 1882.

⁴ The "Report on the Adjustment of Transportation Rates to the Seaboard," already cited, is one of the most successful applications ever made of mathematical methods to social phenomena. It ought to give Mr. Fink as

petition between the seaboard cities, was due to the fact that they were simply intermediate points on the route between Chicago and Liverpool, or some other European port. Of this whole route the railroad formed one part, the water route across the Atlantic the other. He further showed how ocean rates adapted themselves to rail rates, so that the rate Chicago—New York *plus* New York—Liverpool was almost exactly equal to the rate Chicago—Baltimore *plus* Baltimore—Liverpool.¹ This being the case, the amount of traffic at each port was regulated by the harbor and warehouse facilities in each case; and as long as the differentials were not grossly unfair, matters would adjust themselves.²

Matters finally settled back on the same general arrangement as before. But one thing became clear. The water routes could not compete with the railroads at the railroads' war rates. The railroad war of 1881-2 had checked the development of Mississippi River traffic, and had rapidly cut into that of the Erie Canal. The complete abolition of tolls on the latter was almost a matter of necessity; and, when it came, it did not suffice to protect the canal business in the face of a renewed railroad war.

For the peace of 1882 was of shorter duration than its predecessor; and the war which began in 1884 was, in many respects, a more serious one. It was no longer a

high a rank among scientific investigators, as he holds among practical men. Unfortunately, it is so abstruse that very few people take the time to do it justice.

¹ If the goods transported by the Central or Erie alone were considered, New York suffers a very slight disadvantage as compared with Baltimore. But if we take into account the canal rates, New York has a slight advantage.

² The legitimate inference from Fink's arguments is, that the differential rate ought exactly to counterbalance the difference in cost of ocean carriage, if things are to be adjusted on a theoretically correct basis; but that, practically, things will quickly adjust themselves to any basis whatever.

conflict between cities, but between railroads—and an aggravated one at that, because some of the roads had been built for speculative purposes. In some respects it was a repetition of the events of ten years before; only now the West Shore, the Lackawanna, and the Chesapeake and Ohio had taken the place occupied ten years before by the Grand Trunk, the Erie, and the Baltimore and Ohio. It is too early [July 1, 1885] to predict the outcome of the existing war. But it is a mere truism to say that it must end in combination in some form. It is all very well to talk of free competition and survival of the fittest. But permanent competition is virtually out of the question. And survival of the fittest is only possible when the unfittest can be physically removed—a thing which is impossible in the case of an unfit trunk line. The lion and the lamb must lie down together. The only questions are, first, how long before this state of things is to come about; and second, whether the lion is to lie down outside of the lamb.¹

¹ As we go to press these questions seem to be rapidly settling themselves.

CHAPTER VI.

RAILROAD CHARGES AND DISCRIMINATIONS.

Profits of railroads in the United States—General scale of freight charges—Reduction in the past fifteen years—Effect of steel rails—Improvements in railroad economy—Back-loading—How discrimination arises—Charging what the traffic will bear—Different views regarding the system—Classification—Local discriminations—Cases where they are a necessary evil—Personal discrimination—Evil results of the system—Short-sighted policy on the part of certain railroads—Effect of the financial condition of different companies—General conclusions.

Edward Atkinson : "The Railway, the Farmer, and the Public." Issued in book form in "The Distribution of Products," New York, 1885, pp. 229-303.

E. Lavoinne and E. Pontzen : "Les Chemins de Fer en Amérique," Paris, 1882 ; vol. ii., pp. 334-382.

See also references at the beginning of the preceding chapter, especially the Hepburn Committee Report and Testimony.

The number of pamphlets on the subject is enormous. The works of Albert Fink on the one hand, and of Simon Sterne on the other, are good representatives of the intelligent argument on either side. In some respects the best thing which has been written on the subject is by E. P. Vining: "The Necessity for a Classification of Freight, and the Principles on Which it is Based," which originally appeared in the *Railway Review* (Chicago), Oct. 18, 1884.

For works regarding European practice and principles, see chap. xiii.

THE average man troubles himself very little about the speculative management of corporations, or about their character as industrial monopolies. What he wants to know is whether they are charging him too high a price for their services. Nine tenths of the complaint and of the proposed legislation deals with this point. Some say

that corporations are making too much money. Others say that their charges in general are too high. A still more frequent ground of complaint is that the charges are irregular, and involve *discrimination*—that is, that some charges are made higher than others without any good reason for the difference, and that such discrimination is ruinous to the less favored customers, and dangerous to the interests of the public.

The first two complaints, of high profits and high charges, are generally false. The third, concerning discrimination, is, unfortunately, true.

I.—The statement that corporations make too much money is scarcely borne out by the facts. The average return of the railroads in this country is under four per cent., the bondholders receiving an average of four and a half per cent., the stockholders of two and a half per cent. True, much of the stock is "water," not representing any capital actually expended; but even making allowance for this, it is hardly probable that the roads are earning more than five per cent. on the total investment. This assumes an average cost of \$45,000 per mile, implying that about half the stock and one sixth of the bonds are "water." Some authorities¹ of deservedly high repute place the true cost lower; but their methods are not above criticism.

¹ For instance, Poor ("Manual of Railroads of the United States," 1884) is disposed to take the position that about half of the nominal capital is water. The whole question is an extremely difficult one. There are three ways of estimating the probable cost of a railroad. The first is to take the account of stock and debt, and make deductions for amount not paid in cash. The second is to estimate directly the probable cost of duplication of such road. The third is to take another road as nearly like it as possible, which is admitted to have been honestly managed, and see what has been the cost in that case. This is by far the best method, where we can apply it. The two first methods give results much too small: the first, because we can rarely

But it is objected that, even if the average profit be low, the profit of certain concerns is extremely high. Granted. But so it is in other lines of business, and so it must be in any business. If there is much risk of complete failure, there must be chance of large gain to offset it. The effort to prevent exorbitant profits, by limiting the amount which a company may divide among its stockholders, is of little use. It is generally evaded by "stock-watering"—that is, by a distribution among the stockholders of new stock, which costs them little or nothing, and on which they can receive dividends. But even if the law is obeyed, and there is no attempt at stock-watering, the public rarely gains any advantage from it. If a company is not allowed to divide its whole net income, the managers will not reduce rates. They will find it easier to increase expenses. Or they may choose to do a small business at high rates, instead of a large business at moderate rates. To forbid a corporation to increase its profits is to encourage waste and discourage enterprise. The principle of limitation of dividend, though fondly clung to by many of our legislators, cannot be considered

make allowance for earnings which have been spent in construction; the second, because it takes no proper account of "incidentals," an enormous item of expense in any large undertaking. It is often said, on the basis of the first or second of these methods, that any thing above \$30,000 per mile for the United States is water. But if we try to make any comparison with other countries, we shall find these figures too low. The only country whose railroads have cost any thing like as low a figure per mile is Sweden (see Appendix). The cost there is given at \$30,000. But the Swedish roads are built for very light traffic at slow rates of speed; the country is an easy one for railroad engineering; land, labor, and materials are all exceedingly cheap. It is not fair to our roads to make this the standard of comparison.

The explanation of the discrepancy probably is that it is impossible to adapt roads in advance to the exact use which is afterward made of them; and that the changes thus rendered necessary form an item of incidental expense so universal that it is fair to reckon it as part of the cost.

a good one.¹ A judiciously arranged tax system will answer the purpose better.

Where there is not a natural monopoly—that is, in the vast mass of cases—competition will generally do this part of the work. Where the profits of an existing concern are high enough to tempt it, a competitor will come into the field. There will ultimately be combination, and no reduction of prices; but there will be a reduction of profits, and a large one. The business which would support one concern richly, will not do the same for two, no matter how much they combine, or what rates they try to make.²

II.—If railroad profits are not too high, the charge that railroad prices in general are too high loses all its plausibility.

If it is said that railroad rates in general are too high, any one of three things may be meant: either that the rates give too high a profit; or that they prevent the development of business; or that they are higher than in other countries. The first of these points we have already considered. As to the second;—nowhere have railroads done so much to develop business as in the United States, and nowhere has the actual development been more rapid. Mr. Atkinson³ has shown how the transportation charges have become an insignificant element in the price of products. The cost of delivering bread from the baker to his

¹ See pp. 55, 126. T. H. Farrer: "The State in its Relation to Trade," pp. 88–90.

² It is fair to say that the existence of roads like the West Shore is due to the effort of the managers of the Central to earn dividends on watered stock. But it is not fair to infer that, if the dividends of the Central had been limited by law, and the stock-watering prevented, the policy of the road would have been so changed as to remove the inducements to build a parallel line.

³ "The Distribution of Products," pp. 292–295.

customers is a larger element in the price of bread than the cost of getting wheat from the farmer to the miller, and flour from the miller to the baker—though the one is but a few hundreds of yards, and the other as many hundreds of miles.

As to the comparison with other countries:—Railroad charges in the United States average but a cent and a quarter per ton per mile. In 1884 they fell to a cent and one eighth. This is lower than they are anywhere else in the world,¹ and lower than would have been deemed possible a few years since. It is hard to compare our present average rates with those of fifteen years ago, because at that time no general statistics were collected. But it is safe to say that they have been reduced 50 per cent. nominal, or, making allowance for the gold premium in 1870, 35 per cent. actual.² In 1870 the average rates per ton per mile on the roads of New York State were 1.7 cts.; now they are about 0.8 cts. Then the average rates in Ohio were 2.4 cts.; now they are less than 0.9 cts. In the year 1869 the earnings, expenses, and profits of the N. Y. Central per ton per mile were 2.4, 1.4, 1.0 cts. respectively; for the last five years they have averaged about 0.8, 0.6, and 0.2 cts.

Any full statement of the means by which this reduction was brought about would belong to a more technical treatise than this book is intended to be. When it is said that it was due to competition, it is in a certain sense true; only it requires further explanation to show how the whole rate now should be so much less than the mere

¹ This is only true of freight rates. Our average passenger charge is 2.35 cts. per mile, while that of most European countries varies from 1.3 to 2 cts. But passenger charges are a much less important matter than freight charges.

² "The Distribution of Products," pp. 240 ff.

cost a few years ago. The reduction in cost is more remarkable than the reduction in rates. A part of this reduction is due to the mere growth of the country, offering a larger traffic, and enabling the railroad to utilize its facilities more fully. A part is due to consolidation, whether partial or complete, by which connecting roads have been enabled to administer their affairs more economically. But the most remarkable part of the change has been due to a system of improved methods of handling the traffic itself.¹

The history of these changes begins about 1867. At that time matters seemed to be approaching a stationary state as far as any reduction in railroad charges was concerned. Reductions in rates are usually made by the desire of railroads to develop business. But at existing rates, many roads then had little inducement to develop their business very much. They already had all that their track would carry. Iron rails had been deteriorating in quality —under heavy traffic they required constant renewal in order to avoid the most serious dangers of accident.

It was at this juncture that Bessemer steel came into use. It was not a sudden invention. Bessemer was simply one among several others (Siemens, Mushet, Holley) who steadily improved the methods of producing steel cheaply.² The result of the employment of steel was little short of a revolution in railroad business methods. This was, however, an indirect result rather than a direct one. This fact is often misunderstood. At the worst the per-

¹ See an excellent paper by Wm. P. Shinn, in U. S. Internal Commerce Rep., 1882, Appendix, pp. 294-305.

² The result of their labors will be seen by the following table :

Price of rails per ton	1868	1872	1876	1880	1884
Bessemer steel . . .	\$158	\$112	\$59	\$67	\$31
Iron	79	85	41	49	—

centage of expense due to repairs of iron rails was 6%. The saving in cost has been many times this amount. What the introduction of steel rails did was to give the initial impulse in this movement. It made itself felt in a variety of ways.

1. The laying of steel rails and the desire to use them to something like their full capacity led to many improvements in the road-bed itself. These resulted in great economy; but they would hardly have been made under iron rails, because it would not have paid to develop the road-bed far beyond the standard of quality of the track.

2. They found that the steel rails would bear much heavier loads without danger, and this led to the construction of heavier cars. The load could be increased in weight faster than the cars, and thus the "paying" weight constituted a larger percentage of the total weight hauled. Fifteen years ago, the normal freight car weighed 18,000 pounds, and carried a load of 20,000. It was found that by increasing the weight of the car to 21,000 it could safely carry a load of 30,000; and a further increase of weight to 22,000 or 24,000 made it possible to carry a load of 40,000, or even a trifle more.¹ Of the total weight of a loaded freight train nearly two thirds might now be paying weight, instead of only one half.²

3. Along with this economy of load they secured economy of motive power. This was obtained partly by an increase in the size of locomotives, which, while it in-

¹ There is no exact standard of relation between weight and carrying capacity. The figures in the text are taken somewhat at random. It is impossible to tell where the movement will end. Cars are now not infrequently built to carry 50,000 pounds.

² These figures represent possible results rather than actual ones. An average car-load of ten tons represents extremely good railroad economy. A ratio of 50% paying weight both ways is still more unusual.

creased their cost of building and running, increased their efficiency still faster; partly by increased care in making up trains, so that the existing power was used to the best advantage. Hundreds of devices, of which we have no room to speak in detail, were made to contribute to the desired result.

4. But what contributed more than all else to the diminution of cost was that they adapted the business methods of the roads to the new conditions of traffic. The improvements in track and cars had increased the capacity for doing a large business, at the same time that it enabled them to do it more cheaply. They arranged their rates to secure this business and to utilize their capacity to the utmost. One of the most effective devices in this matter was the system of "back-loading." To return a car empty is a great waste of power. In some cases it is a necessity—cattle cars and oil cars, for instance, can, as a rule, carry a load but one way. In those cases the rate must cover the cost of moving the cars full one way and empty the other, before the rate begins to be a paying one. For a long time it was so with nearly all cars employed in the carriage of grain. Gradually our railroad managers awoke to the fact that for obtaining goods to fill such cars any rate was a paying rate, when it would cover the difference between hauling them empty and hauling them full—provided, that is, that such rates developed additional business which could be obtained on no other terms.

For instance, suppose the cost of loading a car with wheat at St. Louis and hauling it to Philadelphia was \$40, and the cost of getting it back empty was \$15. To give any profit the rate would have to be over \$55—say \$60. The company sees that by offering a \$30 rate it can fill its

car with a return load of coal, and it does so. What is the result? In the former instance the expenses were $\$40 + \$15 = \$55$; the receipts, $\$60$; the profit, $\$5$. In the latter the expenses were $\$40 + \$40 = \$80$; the receipts, $\$60 + \$30 = \$90$; the profit, $\$10$. Yet the average rate which secures this profit of $\$10$ is now $(\$60 + \$30) \div 2 = \$45$. An increase of 100 per cent. in the profits of the round trip has been accompanied by a reduction of 25 per cent. in the average rates charged.

This is an extreme case, but it illustrates one of the means by which railroad charges have been so much reduced during the past fifteen years. It also explains how some goods can be profitably carried at rates which seem utterly unprofitable.

III.—But the fact that the charges are so low does not make *differences* in charge bear any less severely upon business. A difference of five cents per bushel in the charge for transporting wheat a thousand miles is a small matter, taken by itself. It would be weeks before it would make a difference of one cent to the individual consumer of bread. But if a railroad makes this reduction for one miller, and not for another, it will be enough to drive the latter out of business. Competition is carried on with such a narrow margin of profit that the railroad has it in its power to ruin either competitor. The fact that charges in general are so low only puts men more completely at the mercy of the railroad authorities, because it is impossible to find any other means of transportation equally good and cheap.

A difference in rates not based upon any corresponding difference in cost, constitutes a case of discrimination.¹

¹ In what follows, we shall confine our attention to discrimination in freight rates. There is the same discrimination in the passenger business,

Even when a railroad tariff was originally based on differences of cost of service, it does not continue so. It never remains long unchanged. Every day special circumstances arise which were not foreseen, and which seem to demand a change. The question in every such case is : what will be the effect of the change? If rates are reduced on certain lines of business, gross earnings will probably increase on account of increased volume of business obtained. But will net earnings increase? That is to say, will gross earnings increase faster than operating expenses?

This is the real question ; and its answer involves two elements. One is, the expense of hauling each additional

but it is not so much felt or so much complained of. First, the business itself is less important. The receipts from passengers are little over two-fifths of those from freight. Second, it is a business on which railroads in general make very little money at best, except in thickly populated districts. That being the case, there is more disposition on the part of the public to allow railroads to run it as they please. They carry passengers in order to attract freight. Every now and then they amuse themselves by a passenger-rate war ; but this does not involve either the same loss to the railroads or the same disturbance to general business which is felt in a war of freight rates.

The really serious form of passenger discrimination is the free-pass system. It is a serious thing, not so much on account of the money involved, as on account of the state of public morals which it indicates. When passes are given as a matter of mere favoritism, it is bad enough. When they are given as a means of influencing legislation, it is far worse. Yet this last form of corruption has become so universal that people cease to regard it as corrupt. Public officials and other men of influence are ready to expect and claim free transportation as a right. To all intents and purposes they use their position to levy blackmail against the railroad companies.

The question should be kept on moral grounds. It is a mistake to suppose that the free-pass system makes any great difference with passenger rates in general, or that they would be reduced if passes were abolished. They would probably remain the same as before.

car-load ; in so far, rates are based upon cost of service.¹ The other is the increased development of business by lower rates ; this is quite independent of cost of service.²

Suppose that the expense of loading and hauling each additional car-load of wheat from A to B is \$10. Present rates are \$15, and at that rate the road obtains 1,000 car-loads a week—gross earnings, \$15,000, profit above operating expenses, \$5,000. The question comes up whether they shall reduce to \$13. If by so doing they can double their traffic and get 2,000 car-loads, it will be good policy ; they will make gross earnings \$26,000 ; expenses \$20,000 ; profit \$6,000. If it only increased the traffic one half it would be bad policy—giving gross earnings, \$19,500 ; operating expenses, \$15,000 ; profit, \$4,500. But, to show how cost of service comes in, if the operating expenses had been \$12 per car-load, the reduction would be bad policy in both cases ; while if they were only \$8 per car-load it would be good policy in both cases.

To a certain extent both these elements have acted in combination to secure the great permanent reduction in rates.³ But in each particular case of reduction, cost of service has played but a minor part, and possibility of develop-

¹ An analysis of the elements which enter into cost of railroad service would carry us too far out of our way. The chief considerations are speed, bulk, risk, quantity, and regularity of shipment. The question whether a return load can be secured is also of great importance. For more detailed analyses see L. E. Morehouse : "Cost of Transportation on Railroads," N. Y., 1874. A. Fink : "Cost of R. R. Transportation" (1874), N. Y., 1882. O. Chanute : "Elements of Cost of R. R. Freight Traffic," 1874, 1885. Jos. Nimmo, Jr. : U. S. Internal Com. Rep., 1876. F. B. Herzog : "The Transportation Question," New York, 1883. Kirkman : "Railway Expenditures," I., 291-327.

² See Appendix, for a more exact mathematical statement of these relations.

³ Hepburn Com. Test., p. 47 (joint letter of Vanderbilt and Jewett) Vining on "Classification of Freight."

ing traffic has been the main question considered. Thus there has gradually grown up a system of rates favoring certain classes of goods, certain localities, or certain individuals. It was found that by lowering the rates for cheap goods a large traffic was developed. It was found that by lowering the rates at competitive points a large traffic might be secured which would otherwise go by other routes. It was found—or at any rate, it appeared—that by lowering rates to certain individuals, a road increased its returns better than by a general lowering of rates.

This constitutes the system of charging “what the traffic will bear.” The ordinary objections to it are obvious at once. It is generally believed that the less-favored shippers are taxed in order that the railroad may do business for others at unreasonably low rates¹; that in any other business the loss of competition would prevent such abuses; and that in the absence of any effective competition, laws should be passed forbidding the railroad to make a great deal more profit on one part of its business than it does on another. This is the aim of anti-discrimination bills.

On the other side, it is maintained by railroad men that this idea of a tax is not warranted; and that any such attempt to enforce equality, whether between classes, localities, or individuals, will diminish the profit and efficiency of the railroads, and not bring the expected advantage to the shippers, still less to the general public.

The effects of the three forms of discrimination—between classes of business, localities, or individuals—must be discussed separately.

¹ Too often, especially in purely legal discussion, this is assumed without argument. Compare R. P. Harlow : “Inter-State Railroads and Their Regulation by Congress” (N. Y. Bar Association Prize Essay, 1880), p. 8.

i. Classification of business. Railroads divide their freight into four or more classes, the division being mainly based on the value of the goods. Thus, dry goods are placed in the first class, and lumber in the fourth; and the charges on the former are made two or three times as high as on the latter. There is a difference of cost of handling, and of risk; but nothing like as great as the difference in charge. The railroad does not base its classification upon cost of service, but upon what the traffic will bear. A ton of lumber has so little value that, if they attempted to charge the same rates for it which they charge for the dry goods, they would get none of it to carry; the traffic would not bear the higher rate.

A great deal of freight of small value is carried not merely at less than the average rates, but at less than the average *cost*; that is, at rates which, if applied to the whole business of the road, would not pay expenses. Many people assume that such business is an actual loss to the road, and that other business is taxed to make up for it. This is a fallacy. Any rate which will more than cover the expense of moving the cars and handling the goods is a paying rate, *provided the business can be had on no other terms.*¹ If it is a question of filling cars that must otherwise be returned empty, any rate which more than covers the mere difference in expense between running them full and running them empty, is a paying rate.² If a manager should reject such business because it did not pay its share of the fixed charges (as distinct from train

¹ Vining : "Classification of Freight," etc.

² See some striking figures in L. E. Morehouse "Concerning the Cost of Transportation on Railroads," New York, 1874, p. 15. These figures are better arranged for our present purpose than are the more comprehensive statistics collected by Mr. Octave Chanute (1874, 1885), or than those of Albert Fink in his report on "Cost of R. R. Transportation," 1874.

expenses) he would make a great mistake. He would reduce his business, and leave those charges the same. The fixed charges must mainly be borne by the lines of business that can best afford to pay them—that is, by the valuable goods.¹

The earliest freight tariffs involved little or no classification. Each step toward our present system has been accompanied by increased efficiency. It has made the cheap traffic possible, and has helped the high-class traffic more than it has hurt it. To do away with this would be

¹ Take a parallel case from manufacturing industry. A wire manufacturer imports the rods which he intends to draw out into wire. He finds them covered with rust. As the first step in his process he washes off that iron rust with sulphuric acid. The washings are often allowed to run to waste. But if a manufacturer will put up the necessary sheds for collecting them and boiling them down, he can obtain a quantity of crystallized sulphate of iron, or copperas. The commercial value of this copperas is very small. It is probably not worth as much as the acid which it contains. Certainly no one would think of deliberately dissolving iron in sulphuric acid, and selling the copperas thus made. But the wire manufacturer has the material on his hands in the form of washings. It is better for him to sell for the merest trifle rather than let it run to waste.

Now suppose a legislator says: "Here is this man making arbitrary discriminations. He has the only wire mill in the region, and so makes a large profit on his wire, while he allows the consumers of copperas to have it at prices which hardly pay expenses. In fact, he sells it at a less sum than the materials cost him. Let us enact a law which shall prevent him from making more money on one part of his business than another." What would be the result of such a law? Would he reduce his price on wire so as to make no more profit than on his copperas? Obviously not. Would he reduce his prices for wire and raise them for copperas? No. He could not sell his copperas at the higher prices, or he would have charged them to begin with. The only result will be that he will stop making copperas. His prices for wire will remain the same. If any thing, they will tend to run higher, because one slight source of advantage is cut off, so that competitors are not so likely to be tempted to come into the business. It would be nonsense for the man who buys wire to say that he is "taxed" to furnish another man with copperas below cost.

a long step backward. If our railroads made it a rule to carry nothing at less than the average cost of doing the whole business, they would give up nearly all the coal trade and a great deal of the grain trade. It would give us dear food and dear fuel, and would injure both the railroads and the districts which they serve.

2. Local discriminations. Where a railroad is the only means of conveyance, it can charge what the traffic will bear, without restraint. But where it comes into competition with a water-route, or with another railroad, its charges are brought down to the lowest possible figure. The points where there is no competition are made to pay the fixed charges, while the rates for competitive business will little more than pay train and station expenses. It is better to have business on those terms than to have it go by the rival route. In a railroad war this competition is carried beyond the bounds of reason. There was a time when cattle were carried from Chicago to New York at one dollar a car-load.¹ These low rates develop the competitive point rapidly, while the higher rates retard the growth of the places where there is no such competition. When the competition is simply between railroads, a pool may do away with these local differences by raising rates at the competitive point. Where one place has the benefit of water competition, and another has not, it is hard to devise any effective means of getting rid of the differences.

We are apt to think that because these local discriminations are an evil, it must be the fault of somebody. In our anxiety to get rid of the evil, we are apt to overlook the natural causes which led to it, and which sometimes must lead to it almost of necessity. That local discrimina-

¹ Hepburn Com. Test. (Vanderbilt), p. 1659.

tions are a most serious evil, no one can doubt. That they are exaggerated, and in many instances flagrantly exaggerated, by the short-sighted policy of the railroad managers, is equally certain.¹ But there are many instances where the railroads are not responsible for them,² and where it is worse than useless to try to prohibit them by law. We are not arguing in favor of this system, but against the popular remedy—a statute.

Suppose it is a question whether a road can be built through a country district, lying between two large cities, which have the benefit of water communication, while the intervening district has not. The rate between these points must be made low, to meet water competition; so low, that if it were applied to the whole business of the road it would make it quite unprofitable. On the other hand the local business at intermediate points is so small that this alone cannot support the road, no matter how low or how high the rates are made. In other words, in order to live at all, the road must secure two different things—the high rates for its local traffic, and the large traffic of the through points which can only be attracted by low rates. If they are to have the road, they must have discrimination.³

¹ Hepburn Com. Exhibits, p. 313. Joint letter of Vanderbilt and Jewett, Testimony, p. 56. Argument of John Norris before Penna. Senate Judiciary Com., Apr. 9, 1885. The general management of a railroad rarely appreciates local needs at their full importance. The plan of having advisory boards to represent such interests has frequently been suggested. The plan has been carried out in some parts of Europe. Mr. H. S. Haines has shown strong reasons for trying it in America.

² E. P. Alexander: "Reply to Questions of the N. Y. Chamber of Commerce," p. 7.

³ Or else give a subsidy. The evils of this alternative have been very clearly seen in American railroad history. Of course this reasoning does not apply to roads which are earning high profits. But it is almost impossible to pass a law which shall apply to profitable roads, and exempt unprofitable ones.

This point is so important and at the same time so hard to grasp,¹ that it is worth while to take a detailed illustration. On the coast of Delaware, a few years ago, there was a place which we shall call X, well suited for oyster-growing, but which sent very few oysters to market, because the railroad rates were so high as to leave no margin of profit. The local oyster-growers represented to the railroad that if the rates were brought down to one dollar per hundred pounds, the business would become profitable and the railroad could be sure of regular shipments at that price. The railroad men looked into the matter. They found that the price of oysters in the Philadelphia market was such that the local oystermen could pay \$1 per hundred pounds to the railroad and still have a fair profit left. If the road tried to charge more, it would so cut down the profit as to leave men no inducement to enter the business. That is, those oysters would bear a rate of \$1 per hundred, and no more. Further, the railroad men found that if they could get every day a car-load, or nearly a car load, at this rate, it would more than cover the expense of hauling an extra car by quick train back and forth every day, with the incidental expenses of interest and repairs. So they put the car on, and were disappointed to find that the local oyster-growers could only furnish oysters enough to fill the car about half full. The expense to the road of running it half full was almost as great as of running it full; the income was reduced one half. They could not make up by raising the rates, for these were as high as the traffic would bear. They could not increase their business much by lowering rates. The difficulty was not with the price charged, but with the

¹ So able a critic as Dr. v. d. Leyen quite fails to appreciate its force. ("Die nordamerikanischen Eisenbahnen," Leipzig, 1885.)

capacity of the local business. It seemed as if this special service must be abandoned.

One possibility suggested itself. At some distance beyond X, the terminus of this railroad, was another oyster-growing place, Y, which sent its oysters to market by another route. The supply at Y was very much greater than at X. The people at Y were paying a dollar a hundred to send their oysters to market. It would hardly cost twenty-five cents to send them from Y to X. If, then, the railroad from X to Philadelphia charged but seventy-five cents a hundred on oysters which came from Y, it could easily fill its car full. This was what they did. They then had half a car-load of oysters grown at X, on which they charged a dollar, and half a car-load from Y on which they charged seventy-five cents for exactly the same service.

Of course there was a grand outcry at X. Their trade was discriminated against in the worst possible way—so they said,—and they complained to the railroad. But the railroad men fell back on the logic of facts. The points were as follows: 1. A whole car-load at seventy-five cents would not pay expenses of handling and moving. 2. At higher rates than seventy-five cents they could not get a whole car-load, but only half a car-load; and half a car-load at a dollar rate (the highest charge the article would bear) would not pay expenses. Therefore, 3. On *any* uniform rate for everybody, the road must lose money, and, 4. They would either be compelled to take the oyster car away altogether, or else get what they could at a dollar, and fill up at seventy-five cents. There was no escape from this reasoning; and the oystermen of X chose to pay the higher rate rather than lose the service altogether.

This is a typical case. The business of a railroad is of two kinds. Some of its business, like the oysters of X, must be done over this railroad or not at all. Of such business it is sure, even at rather high rates. The only limit is the value of the service; the excess of the selling price at market above cost of production at X. But a railroad may also do business like that of the oysters from Y, which can be sent to market by other routes. To do this it must make special concessions and lower rates.

Now many of the railroad expenses are the same, whether it does both kinds of business or only one. Repairs, salaries, and interest charges are mostly independent of the volume of business done. These must be paid somehow, just as the expense of the oyster car must be paid somehow. At the higher rate the road cannot get sufficient volume of business. At the lower rate it cannot get sufficient profit. It must do as the oyster car did, get what it can at high rates, and fill up at the lower ones. If you prohibit this by law you quickly cut away the margin of profit. And if by so doing you make it impossible to run the road, who is most hurt? Not the oyster-growers of Y, who had the low rates. They still have the other route. It is the oyster-growers of X, and men in like situations, who now cannot do business at all.

There is one difference. The oyster car will be taken off as soon as it is unprofitable. The bankrupt road may run on almost indefinitely. But the indirect effect is the same. Witness the history of Granger legislation.¹ The farmers had moved so far west that they were wholly dependent upon the railroads. Where there was but one road it charged what it pleased. Where there were two, they fought for the traffic, and brought rates down very low. A

¹ For details see pp. 130-136.

distant competing point paid much less than a near local one. The Potter law attempted to make the rates per mile for local points nearly the same as they had been for competing points. The result was disastrous. The old roads struggled on as best they might, losing money all the time. But no new ones were built, and the local points could not get the service they needed. They suffered severely; and after two years' trial the law was repealed.

3. Far worse are the discriminations made between individuals. The system of carrying under special contracts, below schedule rates, is the most serious evil connected with our present methods of railroad management. Trade adjusts itself to almost any system of classification, and sometimes even to local discriminations. But where two individuals, under like circumstances, receive different treatment, no such adjustment is possible.¹

A mere "allowance for quantity," if granted to all without partiality, hardly comes under this head. If a man receives a reduced rate because he ships in large quantities, or at stated times, there is good ground for making a certain difference in his favor. But such allowances are not always given impartially; they are frequently kept secret,² and are often quite unreasonably large in amount.

¹ The old theory that a rate should be reasonable in itself, and that, if that is the case, it makes no difference to A what B may be paying, can no longer be held. The chief thing which A has a right to demand is that he should not be unfairly handicapped in competition with B. Any such inequality is a real grievance. Hepburn Com. Test. (Fink), p. 513.

² Hepburn Com. Rep., p. 48. Even where the railroads themselves would like to do away with them it is not always easy. The diversion of freight (by pools) from one line to another, so bitterly complained of by shippers, is resorted to to prevent secret rebates or drawbacks. One of the worst abuses is the practice of "underweighing"; where full rates are charged, but the shipper is allowed to send more goods than he pays for.

If the object of a special rate is to develop business which could not otherwise exist, it may possibly be justifiable. Much good is often done in this way. But there is always a presumption against special rates of this kind. They establish one shipper; but they handicap others. The good they do is seen and felt. The evil they do is unseen, and, for a time, unfelt. This makes the temptation to grant such rates all the more insidious, and their actual effects all the more dangerous.

A special contract, for instance, is given to millers at Niagara. It produces new business at that point. But if it discriminates unfairly against the millers at Rochester or Buffalo, the gain of business at one place is made up by a loss at the other. Not a direct loss, be it observed; the mills will not shut down; but the natural growth of business will be checked. The railroad manager sees the mill at Niagara with its new traffic; he does not see how he may have prevented the growth of the old traffic at Rochester.

What makes matters worse is that, where the system of granting special rates becomes deeply rooted, a great many are given without any principle at all, through the caprice or favoritism of the railroad companies and their agents.¹ The revelations made before the Hepburn Committee,² as to the practice of railroads in the matter of secret rates were simply appalling. The fact that railroads had responsibilities to the public seemed to be completely lost sight of. There was, in many instances, scarcely a pretence of regular charges.³ Everybody received favors as

¹ This is the most indefensible part of the whole system of railroad management. It is characteristic that Bismarck, who always chooses his fighting-ground with skill, made this a main base of operations in his contest against private railroad policy in Prussia. See chap. xiii.

² Hepburn Com. Rep., pp. 49 ff.

³ Hepburn Com. Test. (Goodman), pp. 120 ff. It was estimated that

a matter of course¹; the only question was how many such favors he could obtain.

An unfortunate result of the system is that special rates are granted to the very persons who need them least. Any concern which does not charge fixed prices—from the largest railroad down to the pettiest shop,—gives lower rates to two quite distinct sets of people, and for two quite distinct reasons. Some people get low rates because they are too poor to pay the high ones; others, because they are too shrewd to pay the high ones. The very poor man perhaps gets the low rate, because he otherwise cannot buy at all; the rich man gets the low rate, because he can go somewhere else, and his large custom is worth making special efforts to secure. The more justifiable forms of discrimination are those in favor of the weak. Classification, giving low rates to low-priced articles of prime necessity, like fuel, lumber, or provisions, comes under this head. On the other hand, the great majority of local and personal discriminations are in favor of the strong.² As such, they do great harm to the community by increasing inequalities of power; and in the end they are apt to do harm to the roads themselves. The Standard Oil Company was fostered by a system of special rates until it became strong enough to dictate its own terms.³

This was an extreme case; but there is almost always a

ninety per cent. of the Syracuse business and fifty per cent. of the whole business of the New York Central Railroad was done at special rates.

¹ Goodman, Testimony, p. 159. "Question: 'Then the condition of getting the special rate is making the application?' Answer: 'Yes, sir.'"

² The more plausible arguments in favor of personal discrimination are made by selecting special instances, where they were given in favor of the weak. For the distinction between justifiable and unjustifiable rebates, see E. P. Alexander: "Reply to Questions of Cham. of Com.", p. 9.

³ Hepburn Con. Rep., 40-46. Exhibits, p. 182. Testimony (Rutter), p. 2,549. See references in previous chapter.

certain opposition between the present and future interests of a railroad. If a company's object simply is to make as good a dividend as possible for the current year, that object is best obtained by squeezing the local business of which it is sure, and securing competitive business on almost any terms, however low. But for the permanent interests of the road this is bad policy. The local business may bear the squeezing for a year or two, but it will gradually die under the effects. Such a policy destroys a road's best customers, and strengthens the hands of those who are in a position to dictate their own terms. A special rate to a favored customer means temporary gain. To make the low rate general means temporary loss. Yet, where there is any doubt felt, the latter policy is almost always the wise one.

In so far as stock-watering makes railroads pursue a short-sighted policy, it tends to prevent general reductions of charge. It is only in this indirect way that it has very much effect upon rates.¹ Its influence in this matter is very much exaggerated in the popular belief. A railroad, as we shall see when we come to consider the attempts to base rates on cost of service,² does not take its fixed charges into account in making its rates.³ It tries to

¹ The railroads which have high capitalization on the whole do business at lower rates than the cheaply built ones. During the last twenty years, while rates have been falling so rapidly, the average capital account of railroads per mile has been increasing. The railroad men often try to make their capital correspond to their profits; but they do not try to make their rates correspond to their capital.

² Chap. xiii.

³ This is putting the matter pretty strongly, stronger than many railroad men would be willing to state it. But if the statements on p. 110 be correct, it is unquestionably true. See joint letter of Vanderbilt and Jewett, pp. 70 ff. Testimony (Rutter), p. 414. See, also, testimony of E. D. Worcester before the United States Senate Committee on Transportation Routes to the Seaboard, pp. 141 ff.

arrange matters so that on each class of business it shall make as much money as it can above operating expenses. If it makes a mistake in one place it is so much loss to the stockholders. It is not a thing which it can try to make up at some other place; because, by supposition it would in any event try to make all it could at that other place, and to raise rates there would do more harm than good. To make the most at all points put together, it tries to make the most at each point.

They thus try to get all they can above operating expenses.¹ If their fixed charges are but small, it leaves them a good profit. If the nominal amount of stock is small they can pay a good percentage in dividends. If the fixed charges are large, or the stock watered, the profit or the percentage will not seem so good. But if they attempt to raise their charges (or refuse to reduce them) on this account, the general effect would be to lower profits rather than increase them. The only thing is, that if a company is trying to pay a dividend which it has not really earned, it is more likely to pursue a short-sighted policy in regard to rates.²

This temptation to sacrifice the future to the present is felt far more strongly in the case of a bankrupt road. A set of officials who are straining every nerve to avoid a change of management, will tax heavily the traffic which they have, and tempt new business by discriminations of every kind. The present to them is every thing; the future, nothing; and public interests of necessity suffer.

The principle of charging what the traffic will bear,

¹ Railroad profits are to a large extent of the nature of rent rather than interest. They represent excess of market value above operating expenses.

² They are far more apt to manipulate their accounts for this purpose, or even to make unwise reductions in operating expenses, than to make any changes with regard to rates.

gives the railroads a dangerous power, and one which is often abused; a power against which competition furnishes no remedy.¹ Yet if our analysis of the practice of railroads with regard to freight charges be correct, and if our illustrations mean any thing at all, it is unquestionably the principle which enables railroads to render most efficient service to the community. Still clearer is it that the high rates are not to be regarded as a tax which could be removed if the low rates were abandoned. When we come to examine the practice of European countries,² where the attempt has been made to base rates upon cost of service, we shall find these views confirmed; and we shall further find that the effort to prevent discrimination as a system results in levelling up rather than levelling down.

Wherever there is an industrial monopoly of any kind, there is a liability to discriminations. They have become most prominent in the case of railroads, because the monopoly of railroads has been in some respects most complete, their activity most extensive, and the investigation of their doings most searching; in short, because the railroad has attained a fuller development than other forms of industrial monopoly. It is for this reason that the problem of government control of corporations centres in the question of government control of railroads.

¹ The abuses are never so severe as in a railroad war.

² Chap. xiii.

CHAPTER VII.

RAILROAD LEGISLATION IN THE UNITED STATES.

Early efforts—Railroad taxation—Railroad liability—Regulation of rates—*Pro-rata* laws—Origin and history of the Granger movement—Its results in Illinois ; in other States—Railroad regulation in the South—The Massachusetts commission—Causes of its success—Results achieved in Iowa—Regulation of inter-state commerce—Bills now before Congress—The short-haul principle—Pools—Maximum and minimum rates—Functions of a national commission.

E. Lavoinne and E. Pontzen : "Les Chemins de Fer en Amérique," Paris, 1882, ii., pp. 467–500.

Adams : "Railroads and Railroad Questions," pp. 116–148.

"State Railroad Commissions," *The Railroad Gazette*, New York, 1883.

The Report of the Special Committee of the U. S. Senate on the Regulation of Inter-State Commerce (1885), with the accompanying testimony, will furnish matter of great importance on these subjects.

THE early railroad legislation in the United States was devised for the object of securing railroad construction. The only fear was that railroads would not be built as fast as they were needed. Obstacles to railroad enterprise were removed as fast as possible. General railroad laws were passed¹ which did away with the necessity of securing any special act of the Legislature and made it possible for persons with the requisite capital—or even without it—to build railroads wherever they chose. This negative encouragement was not all. Most communities were only too ready to give positive encouragement in the form of

¹ In New York 1848, 1850; Illinois 1849; Ohio 1854; Michigan 1855; somewhat later in most of the other States.

subsidies. The results of this policy we have seen in a previous chapter.

During this period very few people were far-sighted enough to foresee the abuses of railroad power as they have since developed. Some feared that rates would be made too high, and strove to provide against it, in a cumbersome and ineffective way. The great majority of those legislators who thought about the matter at all, simply feared that railroad *profits* would be too high, and sought to limit the amount which might be divided.¹ This has little or no effect in protecting the shipper. If a railroad is earning more money than it is allowed to divide, it is much easier to spend the surplus in extra ornament or extra salaries, than to reduce rates. Such limitation of dividend may sometimes actually *prevent* reduction of rates by taking away from a road the inducement to increase its volume of business. The road may prefer to do a small business at high rates, rather than a much larger one at rates somewhat lower.

The early attempts at railroad taxation were equally ill-judged. There was a combined effort to tax the road and equipment by local assessment like any other real estate, and to tax the securities as personal property in the hands of the holders. The difficulty about the latter plan, was the fact that such securities were habitually concealed, and practically paid no tax at all. The attempt at local assessment of the road was almost equally unfortunate. No one knew on what basis it was to be assessed. Some assessors valued it as trunk line—*i. e.*, on the basis of its supposed earning power. Others valued it as cow pasture—*i. e.*, on the basis of the value of adjoin-

¹ Compare pp. 102, 103. On the legal aspects of State Regulation of Corporate Profits, see T. M. Cooley, in *North Amer. Rev.*, Sept. 1883.

ing land. "The difference in the assessment of the New York Central and Hudson River Railroad, where for all the purposes that the road can be used, it is of the same value to the company, is twenty-four thousand dollars per mile."¹ The absurdity of this system, if it can indeed be called a system, is obvious enough. It has gradually become clear that the tax must be derived not so much from an assessment of individual pieces of property on the one hand, or against individual holders of stock on the other, as from an assessment of the property as a whole. The best method for doing this is not yet clear; there is a growing belief that the tax valuation should be based on earnings or earning capacity.²

Equally crude were the early attempts to enforce railroad liability; whether in the matter of accidents, or for the performance of their duties as carriers. In the former

¹ N. Y. State Assessors' Report, 1873.

² R. Foster: "The Taxation of the Elevated Railroads in the City of New York," 1883.

In the majority of States the assessment is based on a direct valuation of the property, either made by the State assessors in the first instance, or made by local assessors, and then perhaps corrected by a board of equalization. In Massachusetts and two or three other States, it is based on the market value of the stock or securities—*i. e.*, on net earnings, present or prospective; since it is on this that the market value depends. In Michigan and one or two other States, the tax is based on gross earnings. Real estate not used for railroad purposes is everywhere assessed locally, just as if it were the property of an individual; and an attempt is often made, without much success, to tax stock as personal property in the hands of the holders. See the Report of Messrs. Adams, Williams, and Oberly (Committee of the Convention of State Railroad Commissioners) on Taxation of Railroads and Railroad Securities. New York, 1880.

The question, what constitutes the taxable value of a railroad franchise, has been pretty constantly evaded. But a clause in the California constitution has rendered it necessary for the United States courts to meet the question more squarely; and a similar result seems likely to be reached in New Jersey in the questions arising under the tax laws of 1884.

much real progress has been made ; more by the action of the railroads themselves than by any scheme of legislation.¹ In the latter the progress has been but slight. It is astonishing that a country whose business is so far carried on by bills of lading should have left the question of responsibility upon bills of lading at such loose ends. It is still more astonishing that a country whose business is liable to be interrupted by strikes like those of recent years should have feared to fix the responsibility for these interruptions.² Perhaps it is because the question of rail-

¹ C. F. Adams, Jr. : "Notes on Railroad Accidents." New York, 1879. Compare T. H. Farrer : "The State in its Relation to Trade," London, 1883, pp. 141, 142. The travelling public is now pretty well protected against accidents ; this cannot be said of the railroad employees themselves, who are subjected to a great deal of avoidable danger, and find it very hard to get damages in case of accident.

² Public notice was first attracted to these questions on a large scale in the railroad strikes of 1877 ; and again in the telegraph strike of 1883. The double question was involved, first, whether the railroads could evade performance of a work of public necessity, and, second, whether the strikers could be allowed to take advantage of this public necessity to enforce their demands against the railroads. It is impossible to answer either of these questions in the affirmative. An effort to give an affirmative answer to the first question was finally rejected by the courts of New York in connection with the freight-handlers' strike of 1882. (See Rep. of Sp. Com. of N. Y. Board of Trade and Transp. on Railway Freight Grievances, 1883.) Yet if we say that the railroads are under special necessity, and at the same time forbid the employees to take advantage of it, we are brought into difficulty at once. Carl Schurz, in an able article in the *North American Review*, February, 1884, makes this a ground for urging that arbitration should be employed in all these cases as a matter of public necessity and public right.

Each year brings into greater prominence the necessity of a spirit of common action between the company and its employees. We have not space to enter upon the various means adopted with this end in view. See Charles Paine : "Elements of Railroading," New York, 1885, chap. xiii. M. M. Kirkman : "Railway Expenditures," Chicago, 1880, chap. viii. It is part and parcel of the same question which presses itself more and more forcibly upon all business men as the organization of industry becomes more

road regulation has centred around a problem more pressing, and in some respects more difficult than any of these—the control of railroad charges, and especially of railroad discriminations.

The first attempts to control railroad charges had been as crude as the legislation concerning liability or taxation. The courts began with a blind reliance on free competition. This may do very well as a regulator of railroad profits; as a regulator of rates it is a failure. Yet our courts have been extremely slow to see that it is a failure; and where they have seen it, they have gone to another extreme which is quite as bad. They have in these latter cases tried to base rates forcibly upon cost of service; but this has been done with so little understanding of the railroad business as to make their standards either useless or impracticable.

There have been many efforts to supplement the action of the courts by legislation. The earliest laws of this kind attempted to prescribe maximum rates like the old-fashioned tolls on roads or canals. This was carried through systematically in England. There have been occasional instances in America.¹ But in general even the stricter sort of American laws have simply prescribed that charges shall be based upon the distance without actually prescribing the unit of charge. This is known as a *pro-rata* law; rates arranged on this principle are termed equal-mileage rates.

A *pro-rata* law, in its crudest form, prescribes that charges shall be proportional to the distance. This is obviously unfair, even under the "cost-of-service" principle and more complicated, and personal contact between the capitalist and workman ceases.

¹ The most important instance was probably the provision limiting the passenger fares of the New York Central to two cents per mile.

ciple, because it does not cost a railroad any thing like twice as much to carry goods two hundred miles as to carry them one hundred miles. Once load them in your cars, and the mere expense of hauling is comparatively small. Seeing this, attempts have been made so to modify the *pro-rata* bill as to introduce the principle that the railroad shall not make more profit upon one set of shipments than upon another. This fails, for the same reason that the attempt of the courts to base rates on cost of service fails,—there are practical difficulties in the way of its enforcement. Furthermore, in the attempt to carry out *pro-rata* laws, the indirect effect, in crippling the railroads and frightening away capital, has often been so bad that the laws have had to be repealed, or remain, for the most part, unenforced.¹

Until after the war, the efforts at legislation of this kind were scattered. All were on a small scale. It was in connection with the Granger movement² (1870-77) that this problem first assumed its true importance. While the detailed attempts of the Grangers in large measure failed, this general result was accomplished, that people realized the national importance of these questions. The movement thus has an importance quite out of proportion to the results achieved.

Nowhere had the policy of railroad subsidies been more

¹ See pp. 135, 136.

² An adequate history of the Granger movement yet remains to be written. C. F. Adams', Jr., ("Railroads," pp. 123-132; *North Amer. Rev.*, April, 1875) is admirable as far as it goes, but does not profess to go into details. Compare W. M. Grosvenor, *Atlantic Monthly*, Nov., 1873; P. F. Kupka, "Verkehrsmitteilungen der Staaten," pp. 291-297; E. W. Martin, "History of the Grange Movement," Chicago, 1874; D. C. Cloud, "Monopolies and the 'copie,'" Davenport, 1873. The two works last cited are valuable chiefly as reflecting the state of feeling in the communities where the movement was strongest.

recklessly carried out than in the Upper Mississippi valley. The spirit of enterprise at the close of the war found full play here. There was no lack either of national land-grants or municipal subscriptions. Each community wanted railroads at any price. Each railroad offered glowing inducements to settlers. The result was that railroads and settlers both moved too far west; and ran heavily into debt to do it.

In the years 1865-71, five hundred million dollars had been invested in Western railroads. These roads were dependent upon the wheat crop for their revenue. The price of wheat, which for some years had been high, was at last affected by the extension of production and the change of conditions. With transportation charges at their previous figure, the farmers could no longer pay their debts. With transportation charges reduced, the railroads could not pay theirs. There was a loss to be divided, instead of a profit. It was beyond the power of any law to divide this loss in such a way as to give a profit to both parties.¹ It was the result of general industrial conditions.

¹ The same difficulty exists to-day, and renders it impossible in many instances to make rates which shall be reasonable "in themselves" for either party. This is a fallacy in the plausible ground taken by the Iowa Commission, perhaps the ablest body of the kind in the country. They say (Rep., 1882, p. 556, case of Township Trustees of Red Oak *vs.* C., B., and Q.), "from the standpoint of the carriers' interest it is needless to make a rate less than what is fair and reasonable," and "from the shippers' standpoint the rate should not be more than fair and reasonable," and, again (Rep., 1884, p. 13), "the Commissioners still believe the position [above quoted] to be correct. . . . The Commissioners will labor for reasonable rates, insisting as against the carrier that it shall not be more than reasonable, and as against shipper that it shall not be less than reasonable."

Unfortunately these principles fail where they are most needed. If the parts of the conclusion mean any thing, the whole is often useless. A reasonable rate "from the standpoint of the carrier" is one which gives a reason-

Unfortunately the railroads were managed in such a way that it seemed as if they were directly responsible for pretty much all these evils. In the first place, they were run recklessly, with a most short-sighted view to present interests only. Outrageous favors were given in the way of special rates. Where there was but one railroad, it charged all that it could extort. When the farmer had once settled so far from any market, he was at the mercy of the railroad, which furnished his sole means of transportation.

But where there were two competing roads they brought rates down to a point where they only paid operating expenses, and not any share of the fixed charges. The resulting discriminations were enormous; and these dis-

able profit above operating expenses. A reasonable rate "from the shipper's standpoint" is one which leaves the shipper a fair margin of profit above cost of production of the goods. The trouble at the present time is that the price of wheat is so low that it is impossible to get a reasonable profit for either party. A rate which is low enough to be reasonable for the shipper will be utterly unreasonable to the railroad, and *vice versa*. The commissioners wish to apply two independent standards which cannot be made to meet. The only practical solution of the difficulty is a compromise, based upon a careful consideration of *what the traffic will bear*, the necessities and interests of the shippers as well as of the railroads being taken into account. But any such compromise is far from meeting the demand of the commissioners, that it should be reasonable for each party. On the contrary, from the standpoint of either party separately, it will be utterly unreasonable.

We have no doubt that the sagacity of the Iowa Commission would prevent them from making serious trouble by undertaking to apply their principle to specific cases which it did not fit. Even in the decision quoted, they recognized the necessity of considering value of service. But it is none the less a pity that they should enunciate a theory of railroad rates which breaks down at the critical point when you attempt to apply it. And the evil is all the more serious because nine tenths of the people who read the Iowa report will accept this theory as self-evident truth, and thereby justify themselves in the use of it from their own standpoint, without reference to that of any one else.—See *Railroad Gazette*, 1885, p. 91.

criminations seemed to be the reason why farming did not pay. The farmer reasoned, first, that if he could get the rates which competitive points enjoyed, he could sell his wheat in Chicago and have some profit left ; and, second, if the roads could afford to carry for the competing points at these rates, they could afford to do the same for him.¹ The additional charge on the part of the road seemed to him to be just so much taken out of his pocket for the benefit of the capitalists. What made matters worse was that these capitalists were living in the Eastern States or in Europe, and were regarded by the farmer as the absentee landlord is regarded by the Irish tenantry. Whatever was paid to the railroad owner seemed like so much direct drain on the resources of the community. There was thus a conflict of local interests, which added a political strain to the industrial one already existing. But the railroad owners did not perceive the danger ; still less did they take any measures to avert it. They were managed with a view to the supposed interests of Eastern capitalists without much real regard for the needs of the country which they served. Too often, in the treatment of the farmers, the railroad agents added insult to injury. A state of feeling was developed through the community which only wanted organization to become all powerful. It found this organization in the Granges.

That the movement against the railroads should come, was inevitable. That it took this particular instrument to make itself felt, was in some sense an accident. When the first Granges were formed,² the purposes of the organization were, first, to render farmers' homes attractive,

¹ We can hardly blame him for this, when the editor of the *London Economist*, the highest authority of the kind in the world, fifteen years later, falls into precisely the same fallacy.—*Econ.*, 1885, pp. 66, 316.

² 1867-70.

and, second, to make farming more productive. As a means to this second end, they sought to diminish the expenses; and one of the most important elements of expense was the cost of getting goods to market. It was thus that they became interested, as an organization, in questions of transportation and of railroad control. Their first utterances on this matter were moderate; it was but gradually that they became the instrument of popular agitation.

The first tangible results were reached in Illinois.¹ The constitutional convention of 1870 made an important declaration concerning State control of rates, on the basis of which a law was passed in 1871, establishing a system of maxima. This law was pronounced unconstitutional by Judge Lawrence. The result was that he immediately afterward failed of re-election, solely on this ground. The defeat of Judge Lawrence showed the true significance of the farmers' movement. They were concerned in securing what they felt to be their rights, and they were unwilling that any constitutional barriers should be made to defeat the popular will. They had reached the point where they regarded many of the forms of law as mere technicalities. They were dangerously near the point where revolutions begin.

But they did not pass the point. The law of 1873 avoided the issue raised by Judge Lawrence against that of 1871. Instead of directly fixing maxima, it provided that rates must be reasonable, and then further provided for a commission to fix reasonable rates. Similar laws were passed by Iowa and Minnesota almost immediately afterward. The Legislature of Wisconsin went even

¹ A partial exception should be made in the case of Ohio, where a law regulating freight charges was passed in 1870, but does not seem to have been enforced.

farther, fixing, by the so-called Potter Law,¹ the rates on different classes of roads at figures which proved quite unremunerative. The railroads made vain attempts to contest these regulations in the courts. They were defeated again and again, and finally, in 1877, the Supreme Court of the United States sustained the constitutionality of the Granger laws.

But a more powerful force than the authority of the courts was working against the Granger system of regulation. The laws of trade could not be violated with impunity. The effects were most sharply felt in Wisconsin. The law reducing railroad rates to the basis which competitive points enjoyed, left nothing to pay fixed charges. In the second year of its operation, no Wisconsin road paid a dividend; only four paid interest on their bonds. Railroad construction had come to a standstill. Even the facilities on existing roads could not be kept up. Foreign capital refused to invest in Wisconsin; the development of the State was sharply checked; the very men who had most favored the law found themselves heavy losers. These points were plain to every one. They formed the theme of the Governor's message at the beginning of 1876. The very men who passed the law in 1874, hurriedly repealed it after two years' trial. In other States the laws either were repealed, as in Iowa, or were sparingly and cautiously enforced.² By the time the

¹ The original bill had been much like that of Illinois; but the railroads, who were not strong enough to defeat such a bill, hoped that they might be able to defeat a worse one. They accordingly allowed a series of changes which made the provisions much more stringent. They might have defeated these changes had they tried. They did not try, because they thought the amendments would kill the bill. In this they were deceived. (See *N. Y. Nation*, xx., 189.)

² See Reports of Commissioners of Illinois, Missouri, (recently) Kansas, etc.

Supreme Court published the Granger decisions, the fight had been settled, not by constitutional limitations, but by industrial ones.

Similar efforts to establish rates by commissions for the purpose, have been tried in other parts of the country.¹ It is in the Southern States that such commissions have been most successful in exercising their powers. Georgia has been the centre of this movement, though other commissions of the same sort have been established in adjoining States. It is a little hard to say just what has enabled them to succeed. One thing is, that the rates in general are so high as to leave them a wide margin above operating expenses in which to make their changes. Another thing is, that the competitive business is so well pooled that the railroads have their hands free to bring through and local charges into proportion.²

There is another class of commissions of quite different character; commissions with little or no power to act, and simply established for the sake of securing publicity. The success of such commissions has been, in some instances, surprisingly great. This was especially the case with Massachusetts, under the leadership of Charles Francis Adams, Jr. The Massachusetts commission was established in 1869. At first a great many people were

¹ The California Commission has had an interesting history, too long to be detailed. It undertook far more than could possibly be carried out; and the Central Pacific was able to defy or evade its authority completely.—See H. D. Lloyd: "California Cornered," *Chicago Tribune*, Oct. 8 and 13, 1883.

² The South Carolina legislation of 1883 was fully as stringent as that of Georgia; but some of its strictest provisions were repealed after one year's trial. The legislation of Alabama has never gone quite so far as that of Georgia. In Tennessee, a recent adverse decision of the courts has deprived the enactment of much of its force. In Georgia itself a reaction against excessive regulation seems to be in progress.

disposed to treat it with good-natured ridicule. It had really no power except the power to report. But its reports were strong enough to command respect, and even obedience. The commissioners were by no means infallible. Some of their theories were wrong. They were in favor of a partial State ownership of railroads, which could not have done what they expected of it, and would probably have proved a great misfortune. But the commissioners had something better than correct theories: they had practical business sagacity. They abandoned courses which proved wrong; they followed up with successful persistence those which proved right. Gradually, but surely, they introduced improvements in accounting, which since 1878 have been further extended by the commissioners of other States. In the same way they virtually compelled the roads to adopt safety appliances, by educating public opinion to a point where it demanded such action. And in the same way they exercised a decisive influence on the policy of the railroads with regard to rates; leading them to develop their local business, instead of confining attention to the through business.

Two things aided them in this matter: In the first place, in spite of the prevailing impression to the contrary, corporations are sensitive to public opinion. Even when their managers are not, their owners are. For corporate property is so new a thing that it has not acquired the immunity from interference which long usage gives, and its owners know, or are forced to learn, that they must keep the public in good humor if they would not have their rights curtailed.

Another fact which helps an intelligent commission is that the permanent interests of the corporations and the public are almost always closely allied, however much

their temporary interests may seem to differ. If the object of a railroad manager is simply to pay as large a dividend as possible for the current year, he can best do it by squeezing his local traffic, of which he is sure, and securing through traffic at the expense of other roads by specially low rates—that is, by a policy of heavy discrimination. But the permanent effect of such a policy is to destroy the local trade, which gives a road its best and surest custom, and to build up a trade which can go by another route whenever it pleases. The permanent effect of such a policy is thus ruinous to the railroad as well as the local shipper.¹

By securing publicity of management you do much to prevent the permanent interests of the railroads from being sacrificed to temporary ones. By protecting the permanent interests of the railroads you go far toward securing the permanent interests of the public; you enlist the stockholders and the best class of railroad managers on the side of sound policy. This is practically what the Massachusetts Commission did; and never was work more fully justified by its fruits.²

It would be a mistake to suppose that because the system worked so well in Massachusetts, it must work equally well elsewhere. We are apt to lay too much stress on the effects of a mere law or form. It succeeded in Massachusetts, partly because it was in the hands of able men, partly because the Massachusetts railroad system was so old that it had acquired a certain stability. Many abuses

¹ Germany and Austria have recognized this fact, by establishing the advisory board (*Eisenbahnrat*), through which representatives of different localities and industries can bring their influence to bear on railroad management.

² W. A. Crafts: *Ten Years' Working of the Mass. R. R. Commission. Railroad Gazette*, N. Y., 1883.

incident to a period of rapid growth had passed away, or were in a fair way to regulate themselves. These same abuses, in newer sections of the country, might baffle all attempts at regulation. It is impossible to apply one system to all conditions. You could no more have applied European methods to our Western railroads than you could regulate the growth of an oak by tying tape measures around its branches.

For this reason the success of the Iowa Commission is in some respects more remarkable than that of Massachusetts. The ground was larger, the country newer, the business less stable. Above all there were the difficulties of absentee ownership, already alluded to. But there were certain counterbalancing advantages, which the commissioners knew how to make the most of. The commission was organized in 1878, just after the failure of the Granger movement. Both parties, the railroads and the public, saw that they could not act independently of one another. Both looked to the commissioners to help them to come to an understanding. As in Georgia, the through business was pooled in such a way that the roads had their hands comparatively free to serve local interests. The commission under these circumstances acted as the representative of both parties, and seems to have commanded the confidence of both.¹

The really efficient State regulation is now almost entirely under the somewhat discretionary power of commissioners, whether these powers be wide or limited.² A

¹ Of late, its powers have been increased. The commissioners themselves regard this change as a dangerous experiment.—Rep. Iowa Com., 1884, p. 42.

² Commissions more or less closely resembling that of Massachusetts exist in Connecticut, Iowa, Maine, Michigan, Minnesota, New Hampshire, New York, Ohio, Rhode Island, Vermont, Virginia, and Wisconsin. Somewhat

hard and fast law cannot be enforced. Many States have on their statute-books the so-called short-haul law, which says that a road shall not charge more for part of a given route than for the whole. Yet even where there is a pretence of enforcing this law, a great many violations of it are quietly overlooked. Each individual State suffers from want of jurisdiction. State commerce and inter-State commerce are so mixed that it becomes all but impossible to adjust the relations between the two.

This is what gives force to the demand for congressional regulation of inter-State commerce. Of the right of Congress to take such action there can be no question. Little use has thus far been made of that right. A purely permissive act (1865) authorizes roads to make through connections, etc.; an act of 1873 provides certain regulations for the treatment of cattle. The general question of regulating railroad charges was not discussed until the influence of the Granger movement began to make itself felt. Since 1873 the matter has constantly been before Congress. The House has passed bills on the subject two or three times, and the Senate once; but they have never been able to agree. In 1878 the Reagan bill was first introduced to the notice of the House. Since that time it has been almost constantly under discussion. Various substitutes have been proposed; the bill itself has been modified in some of its essential features. In its most recent shape it strictly forbids discrimination, local as well as personal; prohibits pools; and provides for the establishment of a commission with somewhat active powers. The House Committee in the last session (1884-5) substituted a much less stringent bill. The House itself reversed

wider powers are enjoyed by the commissioners in Illinois, Kansas, Kentucky, and Missouri—also in the States referred to on p. 136.

the action of the committee, and passed the Reagan bill. The Senate substituted a more moderate bill of its own. Ultimately no agreement was reached, and nothing was done.

All the bills agree in trying to stop purely personal discriminations, and in providing for a commission of some sort. They also agree, for the most part, in trying to secure publicity of rates. The points at issue are: 1. Whether local as well as personal discriminations shall be prohibited; that is, whether the bill shall contain a "short-haul clause." 2. Whether pools shall be prohibited as well as discriminations. 3. Whether the commissioners shall try to determine what constitutes a reasonable rate, and to fix maximum or minimum limits for railroad rates. 4. Whether the commission shall have administrative powers, or only advisory ones.

The difficulties under the first head are chiefly of a practical character. The short-haul principle is right enough in most cases. As a statement of what is generally best for the community, or as a general line of railroad policy, it is undeniably right.¹ Apart from the temporary disturbance of business there would be no great objection to enforcing it by law, provided that *law can be made to reach all the rival routes*. If it cannot, you cripple one set of routes to the advantage of another. Consider what would be the probable effect if Congress should pass a short-haul bill, and it should be found possible to enforce it. Our roads would then be forbidden to make their through rates lower than their local ones. They could not

¹ It is also undeniable that our railroad managers have violated it to an extent which is unjustifiable even from the point of view of the railroad-owners themselves. Compare the statements of Pres. Devereux of the C., C., C.; & I., before the special committee of the U. S. Senate, 1885, and elsewhere.

reduce their local rates to the standard of their through rates without destroying their profits. They would have to raise their through rates. This would have the effect of sending through shipments of grain *via* Canada, where the roads would be subject to no such restriction. The chief gainers from the passage of any such bill, and almost the only ones, would be the Englishmen who own the Grand Trunk Railway of Canada. Similar attempts in Europe, backed by far greater power and opposed by less obstacles, have failed from precisely the same difficulties—either international competition, or the competition of water routes.

The problem is comparatively new in the United States. It is old in Europe; and the result of European experience has been to give up trying to prohibit pools and discriminations at the same time. It is probably not too much to say that no law has ever seriously discouraged either of these things without at the same time encouraging the other. That this is so, is plain matter of history. It is not hard to explain why it must almost of necessity be so.

We have seen that railroad expenses are of two kinds, fixed charges and movement expenses. The latter vary with the amount of business done, the former do not, except to a comparatively slight extent. We have further seen that competition tends to bring rates down to the basis of movement expenses. Now railroad competition may exist everywhere, somewhere, or nowhere. If it exists everywhere, rates are everywhere reduced to the level of movement expenses, and there is nothing to pay fixed charges, as with the West Shore to-day. If there is competition somewhere, the competitive points will have rates based on movement expenses, and the others will

have to pay the fixed charges. This constitutes discrimination. If we have competition nowhere, this either involves a pool, or amounts to the same thing. We are thus face to face with the choice between ruin, discrimination, or pools. The first is out of the question, the second is the very evil which we are trying to avoid.

Unfortunately the third alternative is not altogether satisfactory. The history of pools has been a checkered one. The men who are trying to stop arbitrary abuses of the railroad power do not like to adopt a means which shall render that power itself all the stronger. They are disposed to believe that legal enactments if made stringent enough can do directly what pools can do indirectly. There is much reason to doubt whether they can. At best such enactments bear most heavily on the good roads. A road whose management is above board is exposed to the penalty of the law, which a trickily managed road can evade. We have elsewhere¹ shown reason to believe that the danger of pools was exaggerated. We have never in the past given them a fair chance. By regarding them as illegal from the outset, and refusing to give them the sanction of the law, we have made it almost necessary for them to pursue a short-sighted policy. Countries which have not forbidden pools have found it possible to regulate them far more easily than they could regulate roads which were outside of such combinations.

If discrimination, and especially personal discrimination, is the main evil, it seems best to strike squarely at that with all our might, and not waste our power by pursuing other more or less conflicting aims, or by fighting other less serious abuses.

The effort to establish maximum and minimum rates

¹ Pages 76, 77.

seems unlikely to be successful. It would hardly do to place the minimum rate very far above the competitive rate.¹ On the other hand, it will not do to place the maximum rate too low to cover its share of the fixed charges if the road should lose its competitive business. These limits are so wide apart that they would be almost inoperative. The same indefiniteness attaches to the idea of a "reasonable rate." On what basis are we to compute it? It has been recognized under the common law that rates should be reasonable; the whole difficulty has lain in defining what constitutes a reasonable rate. Such a clause might be useful in extending the jurisdiction of the commissioners to cases not otherwise provided for; it is hard to see how it could furnish any definite guide for their action.

This brings us face to face with the question how far it is desirable that the commission should have judicial or administrative powers at all. The general opinion seems to be that some such powers ought to be given. But there are important reasons on the other side. First, the really successful commissions in the United States have been established with the purpose of securing publicity rather than with the purpose of executing judgment. Now, strange as it may seem, the possession of active general powers is a hindrance in this respect. A railroad may be ready to give information to an outside party, which it would not give to a judge who might some time use that information against it. For the sake of enforcing the law in a few cases we might readily sacrifice the power of influencing public opinion rightly in a great many cases. Again, a commission with judicial powers is almost certain to magnify its own office. This danger made itself strongly felt in England, where the English Commission

¹ Chiefly because it would prevent the development of low-grade traffic.

constantly undertakes more than it can accomplish.¹ The United States Commission might decide a few cases; but its authority would be evaded in a hundred times as many more. The worst evil which could possibly befall us, would be the attempt to apply a great deal of regulation somewhere, by an agency which was not strong enough to enforce such regulation everywhere.

¹ Chap. ix.

CHAPTER VIII.

THE ENGLISH RAILROAD SYSTEM.

Contrast between the railroad systems of England and the United States—Relations of railroads to the investors ; to the shippers ; to one another ; to the law—Capital and earnings—Rates for passengers and freight—Organization of railroad service—The Clearing-House.¹

For references to books see chapter ix.

THE feature of the English railroad system which most forcibly strikes an American observer, is its stability. This is the fundamental difference between their railroads and ours. It shows itself in their construction, their management, and their legal relations. The mere traveller sees it in the massive stone bridges, the tunnels and viaducts, the station accommodations, and a thousand details of less importance which combine to produce an impression of solidity and finish, entirely wanting in the majority of American railroads. The statistician sees it in the figures showing the cost per mile of road, which in America is little over \$60,000, and in England is more than \$200,000. The railroad man sees it still more strongly when he compares the permanent traffic agreements, and smooth workings of the Railway Clearing-House in England, with the alternation of free fights and hollow truces which has marked the history of the Joint Executive Committee in America. The historian feels it most strongly of all, when he sees the vigor, often obstinate and sometimes blustering, with

¹ Much of the material in this and the following chapters has appeared in the *Railroad Gazette*, in the course of the years 1884 and 1885.

which the English railroads or the English shippers defend what they deem to be their vested rights, and when he contrasts with it the painful helplessness of American Legislatures against the railroads at one point, or of American railroads against the Legislature at another.

Many writers on both sides of the Atlantic assume that the differences in railroad management between England and the United States are in large measure the result of differences in legislation. This is a mistake. It would be nearer the truth to say that the differences in legislation were the result of differences in management. The fact probably is that the different systems, of management and legislation both, are an almost inevitable outgrowth of the different industrial conditions of the two countries; and that any scheme of government policy has counted for little in either case.

The English railroads were mainly built to accommodate and extend existing business. As the facilities were increased, the business grew enormously; but for the most part, on lines which already existed before railroads were thought of. On the other hand, the American railroads have been mainly built with a view to the development of new lines of traffic, new establishments, or even new cities. The Englishman built for the present and future both; the American chiefly, and sometimes entirely, for the future.

This hope of future gains, out of all proportion to present traffic, of necessity gave railroad business in America a more speculative character than in England. It did more than that. This original difference of purpose laid the foundation for almost every other prominent difference between the two systems. It was an all-important factor in determining the relations of a railroad to its investors, to its patrons, to other railroads, and to the law.

I. Railroads and Investors. — The English railroads were originally built to meet the demands of a community which already enjoyed good roads and canals, and insisted on having good and secure railroad service. Capital was abundant ; it was spent freely and sometimes lavishly. Double track was habitually laid, grade crossings were avoided, and every effort was made to construct the road under a high standard of engineering art. The result was that the original line required but slight changes. There were many improvements made, but there was comparatively little actual reconstruction.

American railroads, on the other hand, were frequently built where existing business and existing means of communication amounted to little or nothing ; where capital was scarce, and where speedy and economical construction was more desired than solidity or safety. The question was not what kind of a railroad they were to have, but whether they were to have any at all. To avoid the expense of cuttings and embankments the line was adapted as far as possible to the natural inequalities of the ground. There were heavy grades and sharp curves. Sleepers were laid directly upon the ground without ballast. The station accommodations were insufficient to afford protection from the weather.

As traffic grew, many of these things had to be changed. But the changes were not mere improvements, as in England ; they involved total reconstruction. Their cost was often out of all proportion to the original investment. The easiest way to provide the money for such changes was by an issue of bonds. Where the improvements cost more than the road, the bondholders' investment amounted to more than the stockholders'. The managers of these roads were chiefly dealing with borrowed capital, to which

they were not directly accountable. From this it was but a step to the system of building roads by the proceeds of the bonds, where the actual investment on the part of the stockholders amounted to little or nothing—a practice which has at times been wellnigh universal in America.

From this abuse of the borrowing power of corporations and the worst forms of stock-watering, England has been free. The proportion of bonds or "debentures" to stock has been kept down to a low figure. Directors have been held to their responsibility far better than in America. They are not allowed to make lucrative contracts with concerns in which they are themselves interested. It is true that there have been abuses of trust, and serious losses of capital. The railroad mania of 1845¹ in England was even wilder than that of 1871 or 1882 in America. But the speculation was at the peril of the shareholders themselves, and was not done with borrowed capital obtained from bondholders under false pretences.

2. Railroads and their Patrons. Railroad Service.—The English roads were organized at the outset with the intention of performing whatever service might be required of them as carriers. They did not delegate one part of their business to a sleeping-car company, and another part to an express company. The English freight service does a great deal of business which in America would go by express. The railroads themselves do the work of collection and delivery; and, in the cities at any rate, it is done with great promptitude. Goods received by the companies at Liverpool in the afternoon, and destined for London, are forwarded the same night, and delivered at the door of the consignee on the morning following. The force employed by the railroad companies for cartage is enormous;

¹ See J. Francis : "History of the English Railway," London, 1851.

its organization, for collection as well as delivery, is thorough; and the terminal expenses due to this work form a main item in the freight charges for the higher classes of goods.

Thus the English system is free from most of the abuses which have arisen in America in connection with subsidiary corporations, whether for express service, car service, or terminal facilities.

On the other hand, when English railroads were first chartered, the shippers desired and expected to furnish their own cars. In the low-class freight traffic they have generally done so. It is characteristic of English conservatism that this custom has been retained so long. It is inconvenient to both railroads and shippers. The shippers complain of damage and detention of cars; the railroads complain of waste of space and power. Both parties have good ground for their complaints.¹ Besides these more serious evils, the custom gives to English freight trains a disreputable appearance which contrasts almost ludicrously with the solid excellence of the line and buildings. An uninstructed observer might readily suppose that the companies had spent all their money on the permanent way, and, having nothing left for equipment, were tottering on the verge of hopeless bankruptcy. Yet such is the inertia of English business habits, that, except in the Northeast, the efforts of the railroads have been powerless to overcome it.

3. *Relations of Railroads to one another.*—The stability of English business has made it possible to bring railroad competition under control. It was said by a member of Parliament in 1872: "I do not think that there is at this moment a competitive rate existing in the kingdom." As

¹ Gustav Cohn: "Englische Eisenbahnpolitik," ii., 112-120.

regards direct competition between parallel lines of railroad, the statement was not far from the truth.

A railroad in England can calculate its probable business in advance. So also if one railway builds a branch to compete with another for traffic of which the latter has hitherto had a monopoly, it can guess with some degree of accuracy what share of the traffic it is likely to control. The competition, as long as it exists, is less speculative. And, at any rate, one railroad war will generally settle the matter. With us a railroad war settles nothing. A truce is patched up for a time; but after a few years, or even months, pass, the conditions of traffic are so changed that the roads must fight it out over again. But in England the relative strength is settled once for all. A division of traffic which is right now is likely to be right ten years hence. There is no probability that new connections will be built or new districts developed in such a way as to seriously alter the relative strength of the competing parties. Still less likely is it that completely new through-lines will be built to contend for their share in a new division. There has been no important case of the kind for more than thirty years.

A division of traffic for fourteen years or more has not been infrequent in England. In most parts of America, it would be impossible. Our traffic agreements have to provide for constant revision of percentages; each revision offers the opportunity for a new quarrel. Arrangements of long standing, like the Chicago-Omaha pool, may be completely unsettled by a new system of connecting lines. Steady maintenance of schedule rates is equally impossible. Competition in America is only held in abeyance for short periods. In England it is really brought under control.

4. *Railroads and Legislation.*—All these facts have an important bearing on the position of the railroads before the law. It may fairly be said that the railroads and the public are more independent of one another in England than in America ; not because there is less conflict, but because the community feels the results of any such conflict less in England than with us.

In the first place, the English companies have less to fear from sudden changes in legislation, or sudden movements of public opinion. They can behave in an exasperating manner without endangering any of their well-recognized rights. Such impudence as was displayed by the companies in the face of the early decisions of the Railway Commissioners would be all but impossible in America. An American road which should thus openly defy a regularly constituted public authority would raise a wave of public sentiment against it, which would overbear all vested rights and privileges. There is always danger of a kind of public lynch law. In order to disobey the law in America, it would be necessary to make a show of complying with it. But in the majority of cases it may fairly be said that honestly managed American corporations have really tried to conform to the requirements of commissioners, even before the courts have taken the steps to render such compliance necessary. This has not been the case in England.¹

Even when a law regulating charges is enforced, it affects railroad earnings in England much less seriously than in America. If competition is done away with, you can apply almost any scheme you please with compara-

¹ For a striking instance, take the conduct of the Great North of Scotland in the Aberdeen manure case. Evidence before the Select Committee on Railways, 1881, qu. 639, 4687. Compare the refusal of the L. & N. W. to act as carriers of coal, qu. 2993.

tively little harm ; if competition is active, you cannot with justice or success do what will cripple one competitor against another. In America we have to deal with rail and water competition both. In England water competition still exists, and seriously interferes with some of the schemes of regulation ; but as far as a railroad competition, pure and simple, is concerned, the authorities have the field almost clear, and can arrange matters to suit their own notions of vested rights. Decisions which would create a panic in America scarcely call forth a public protest in England.

But the effect is not all one-sided. These facts cut both ways. They make the public authorities in America more powerful, but less independent. If legislation is to have such a serious effect it must be framed with the utmost care, or it will react against the men who designed it. The very weakness of American railroads is thus a source of strength.

Any legislation which seriously affects railroad profits will check the increase of railroad facilities. Such increase of facilities is essential to the development of any growing American community. If such a community passes laws hostile to the railroad interest, it soon feels the evil effects. The Potter law in Wisconsin¹ is an instance in point. The reduction in charges caused a reduction in profits ; this stopped the growth of railroads ; the growth of the community was thereby brought almost to a standstill. The very interests which were most clamorous for the law in 1874 were most clamorous for its repeal in 1876. The English public is not affected by restraints of this kind, because the English railroad system is so fully developed that its extension is not a matter of vital concern to the business interests of the nation.

¹See p. 135.

To sum up: England can afford to make a great many laws which America cannot, for three reasons: First, the English railroads have more power to resist the enforcement of laws which injure them. Second, even when the laws are enforced their profits are not so much affected. Third, the business interests of England are not dependent upon increased railroad facilities, nor obliged to encourage new railroad construction.

The following table will give some idea of the extent and financial condition of the English railroad system in the year 1883:

	Great Britain and Ireland.	United States.
Mileage	18,681	110,414
Capital (and debt)	\$3,815,000,000	\$7,478,000,000
Per mile	204,500	61,800 ^a
Gross earnings	345,000,000	824,000,000
Per mile	18,500	7,500
Operating expenses	182,000,000	531,000,000
Per cent. of earnings	53	64 ^b
Net earnings	163,000,000	293,000,000
Per mile	8,750	2,650
Per cent. of capital	4.29	3.92

The United Kingdom possesses about one mile of railroad to every six and one half miles of territory; a little less than the proportion prevailing in the States of Pennsylvania, Ohio, Indiana, or Illinois. But if England alone be considered, apart from Scotland and Ireland, the proportion is of course much greater—nearly the same as in Massachusetts.

The cost per mile is remarkably high, not merely in comparison with the United States, but with other Euro-

¹ The English figures are from the "Board of Trade Returns"; the American figures are based on those of Poor's "Manual."

^a This figure is based on the total mileage return; the others on the return of miles *in operation*. Hence the apparent discrepancy.

pean countries, the average for the whole of Europe being only about \$115,000 per mile. In the first place, the original investments of capital were made with a thoroughness and lavishness not tempered by any regard to the immediate wants of trade—the same lavishness which proved so unfortunate in the case of the Grand Trunk Railway of Canada, and which English builders have until recently insisted upon manifesting all over the world. Secondly, there have been large additions to the capital account in recent years. The cost per mile of lines open in 1863 was £32,804, or \$160,000. It increased slowly until 1872, when it was £36,000, or \$176,000. Then began a period of rapid increase; in 1874 it reached £37,000, in 1876 £39,000, in 1878 £40,000, in 1881 £41,000, in 1883 £42,000. The cost per mile of British railroads at the end of the year 1883 showed an increase of 16 per cent. in eleven years.

To be sure, the United States cost per mile, running up from \$50,000 to \$62,000, shows an even greater percentage of increase—a great deal of it mere water. But it is not half as great an actual increase for each mile; and we almost certainly have more to show for it in the way of improvement of road and equipment. There was in the United States a great deal more room for such improvement, and necessity for new capital expenditure on roads which had been at first badly built and lightly equipped.

It is impossible to avoid a suspicion, which the secrecy of English railroad accounts prevents us from proving or disproving, that certain leading English railway companies have been in past years paying dividends out of capital; dividing as large a proportion of the gross earnings as possible, swelling the construction account unfairly, and borrowing money for expenses which should have been paid out of revenue.

The worst form of stock-watering, unhappily so common in America, by which the construction account is loaded down, not with capital borrowed for investment, but with purely fictitious capital, representing no actual investment whatever, is practically unknown in England. There is no temptation for an honestly managed road to water its stock in this way, because there is no legal limitation of dividend. The attempt to do it with dishonest purposes would be not merely unsuccessful, but dangerous to those who should undertake it.

From the load of bonded debt with which our railroads are burdened, the English companies are, to a considerable extent, free. The issue of such obligations has been practically limited to one third of the paid-up capital.¹ It thus happens that while the proportion of net earnings to capital is essentially the same in the two countries, the English dividend average is much higher and steadier.

When it comes to a comparison, not of earnings, but of rates and services, the matter is much more difficult. It is almost impossible to compare the amount of work done, or the cost of doing a given amount of work. Train-mile figures we have in abundance; but as long as we do not know the average weight of freight or number of passengers carried, we cannot even guess at what these figures indicate concerning matters of public service. The English companies do not furnish or even compile ton-mileage statistics. This is no mere accident of practice; it is characteristic of the principle on which English railways are managed. There is a fundamental difference of

¹Instead of the distinction between stock and bonds, the English railroad capital is divided into ordinary, preference, guaranteed, and debenture stocks, forming, respectively, 37, 26, 12, and 25 per cent. of the whole. The debentures correspond most nearly to bonds in their character.

purpose between train-mile and ton-mile statistics. The train-mile is, in a rough way, the unit of *railroad* service—so much work done by the railroad. The ton-mile (or passenger-mile) is, in the same rough way, the unit of *public* service—work done for the public. Now, the whole theory of the English railroad system starts from the principle that railroads are to be managed as business enterprises, not as matters of public service; hence, their impatient rejection of the idea that they should compile a set of statistics arranged from an outside point of view, with but little inside interest.

We thus actually have no figures which we can compare in the aggregate. A comparison of charges in detail is almost equally difficult, owing to differences in the kind of service rendered in the two countries, and to the multitude of special rates. In general, it may be said that passenger rates are lower in England, low-class freight rates higher; and that for the charges on the more valuable freight, no comparison between the two countries is practicable.

The passenger traffic in its three classes is conducted at prevailing rates of four, three, and two cents per mile respectively. Practically, the bulk of the traffic is done at a two-cent rate. The change in this respect in the last fifteen years is quite noticeable. Fifteen years ago the fast trains did not generally carry third-class passengers; now they almost always do. At the same time the comfort of the third-class carriages has been greatly increased. The result has been an enormous development of third-class travel. Comparing the figures of 1880 with those of 1870, we find that the number of third-class passengers carried had much more than doubled, while the first-class had increased but slightly, and the second had diminished

considerably. In the year 1880,¹ out of the immense total of 541 millions of passengers carried in England alone (more than double the American figures for the same year), five sixths were third-class; so that the third-class traffic produced more than twice the gross revenue of the two other classes combined. There is, therefore, but slight error in regarding two cents per mile as the normal passenger rate in England, while that in America is nearly 2.35 cents per mile, although the average American passenger journey is three or four times as long as in England.

Any attempt at comparison of freight charges would be long, technical, and unsatisfactory. On high-class freight it is altogether impossible, because the English rates for such goods include collection and delivery. No one can tell how much we should allow for cartage, or whether we should take American freight rates or express rates as our standard of comparison. An extremely rough estimate, not making allowance for any of the disadvantages to which English railroads are subject, would indicate that their charges per ton-mile on all traffic average are from fifty to seventy-five per cent. higher than ours.

The means of handling this traffic are in some respects far better than those in the United States. Especially is this true as regards organization.

In the first place, the lines of consolidation have become so definitely settled that we can speak of the English railroad system as something in a certain sense complete. The lines of railroad construction were for the most part laid down in 1845. The railroad mania of that year was never repeated. Ten years more indicated the forms of

¹ The same proportion has since held good. The figures for the United Kingdom for 1883 were : Class I., 36,000,000 ; Class II., 66,000,000 ; Class III., 581,000,000.

arrangement or consolidation. Another ten years indicated the details. Since that time there has been a period of comparative quiet. The consolidation has taken place, not on parallel lines, but on radiating ones. Besides three northern companies, there are nine systems radiating from London as a centre. This arrangement increases the common interests and lessens the conflicting ones.

Secondly, the agreements between rival routes have been so permanent that they are sometimes no longer felt as a restraint, so thoroughly has traffic adapted itself to their conditions. This is the case with many pooling arrangements. The early history of English railway pools is obscure. They first assumed importance some thirty years ago. The London and Northwestern seems to have taken the lead in this policy; its great rival, the Midland, while maintaining rates, has been less inclined to divide traffic. English railroads have had great advantages over ours in enforcing these agreements. The courts have looked upon them with less disfavor, and statesmen with much more favor than has been the case in the United States.¹ At present they seem to be losing some of their importance; not because they are powerless, but, as already indicated, because traffic has become so stable that they are less necessary than they were.

Third, in place of our joint executive committee, they have the far more efficient and highly organized Railway Clearing-House.² This is not a judicial, nor, in the ordinary sense of the word, an executive body. It decides no disputed questions; it makes no rates. It is an incorporated

¹ One of the most important agreements of this kind is said to have been arranged by Mr. Gladstone himself.

² The best account of the workings of the English Railway Clearing-House is to be found in the evidence before the Joint Select Committee of 1872, Appendix, pp. 839-945.

body; but this is only to give greater responsibility to its work. It is simply a highly organized machine for keeping and settling traffic accounts. It does the work of our fast-freight lines plus a great deal more.

One part of its work corresponds exactly to that of our fast-freight lines—namely, the superintendence of car-mileage accounts. But it can do that work better than an American line or car clearing-house, because it has at every junction employees of its own, "number-men," to check and report the car movement. It is not, therefore, obliged to depend solely upon reports furnished by the companies themselves.

Its much more important department of work is to settle the receipts of different companies from through freight by accounts and balances, instead of by actual collection in every instance. It was with this purpose that it was organized in 1842. It grew slowly till 1850, then rapidly, and has for many years included practically all the railroads in England.¹

It is governed by a committee consisting of one delegate from each railroad. A two-thirds majority is required for action. Its permanent officers are a secretary and a treasurer. The accounts are made up, not between each company and the clearing-house as a whole, but between each separate group of two or more companies. There are two reasons for this—first, in order that a special disagreement between two companies may not interfere with the whole system of accounts, and second, in order that special expenses may be charged where they belong.

For instance, in the matter of classification: there is a

¹ The clerical force employed is over 2,000; the number of transactions settled is 7,000,000 annually, with an aggregate value of well on toward \$100,000,000. The car-mileage settlements amount to 500,000,000 miles. F. S. Williams, "Our Iron Roads," 3d ed., London, 1884, pp. 313, 314.

system generally adopted throughout England known as the Clearing-House classification. It has been formed by the Clearing-House, and is but slightly changed from year to year. Each railroad had originally quite a different classification of its own, but they have all found it convenient to adopt this general system. But there are certain districts where a different classification is found more available, and this difference may affect the billing of the through business. Unless the companies handling such consignments object, the Clearing-House does not; it only makes an extra charge for the greater trouble in making up the accounts. So of special rates: any two or more companies are at liberty to make what rates they please and divide them as they please, and the Clearing-House will carry out their wishes. But if one company makes a through rate and another company is dissatisfied with its portion of that through rate, and insists upon charging its own local rate—which it has a right to do when there is no agreement to the contrary—the Clearing-House takes no responsibility in the premises. It simply leaves that account open till the matter is settled.¹

¹ The general method of operation is as follows: Cars carrying any considerable amount of through freight may all pass from one railway to another without transshipment. No "paid-ons" are collected by one company from another. The way-bill, an abstract of which is sent to the Clearing-House, furnishes a claim which is as good as the money. Only in case of undercharge the road collects the deficiency.

The gross sum received for a consignment of freight, whether paid by the sender or the consignee, is debited to the road that collects the money. The credits for this sum are distributed among the different companies as follows: First a fixed sum of 1s. 6d. per ton is set apart for station expenses at each end (except in the lowest class of traffic, which pays half this amount). Then in the case of all carted goods an arbitrary credit is made at each end for expenses of collection and delivery—7s. per ton in London, 2s. 6d. in other places. This is unfair in a great many instances, but it is claimed that the inequalities balance each other for the whole work of a

The Clearing-House is an institution of unquestionable benefit to all parties concerned—railroads and shippers alike. Similar experiments are being tried in various parts of continental Europe, with a fair measure of success. The Southern Railway and Steamship Association does the same sort of work—though less completely—in our own country. But all attempts to apply a general system of the same sort throughout the United States, have been brought face to face with such difficulties that they have never been put into actual practice. Nevertheless the possibility of finally establishing some such system is constantly in the minds of many of our most thoughtful railroad men. It is not impossible that the right sort of a national railroad commission might do much toward securing the establishment of a clearing-house; and it is certain that the right sort of a clearing-house, once well established, would do much toward making the work of a national commission easier and more effective.

railway company. The sum remaining after these deductions for terminals is pro-rated among the roads over which the goods have been carried, usually upon the basis of miles actually traversed. But a company cannot, in general, claim credit for more than its shortest possible route between the points where the goods entered and left its lines. And on the other hand constructive mileage agreements are not uncommon. In fact, any two or more roads may make any sort of agreements they please about through traffic, or may even for the time being "agree to disagree," and the Clearing-House will not interfere; it will hardly consent to arbitrate when requested to do so by both parties. Its arbitration committees are for quite another purpose—not to make rules, but to decide questions of liability under existing rules. The separate roads must make their own agreements. But all extra expenses to the Clearing-House in these agreements or disagreements are carefully charged to the companies in question.

CHAPTER IX.

ENGLISH RAILROAD LEGISLATION.

The early charters—Competition and combination—Acts of 1854 and 1873
—Work of the Railway Commissioners—Want of jurisdiction—Lack of power to enforce decrees—Principles applied in the regulation of rates—Charter maxima and station terminals—Differential rates—Personal discriminations forbidden—Questions concerning local discriminations—Efforts of the Railway Commissioners to base rates upon cost of service—Results of the investigation of 1881–82.

Report from the Select Committee on Railways : Minutes of Evidence, and Appendix. 1881 and 1882.¹

Gustav Cohn : “Untersuchungen über die Englische Eisenbahnpolitik.” Vol. i : “Die Entwicklung der Eisenbahngesetzgebung in England.” Vol. ii : “Zur Beurtheilung der Englischen Eisenbahnpolitik.” Vol. iii : “Die Englische Eisenbahnpolitik der letzten zehn Jahre.” Leipzig : 1874, 1875, 1883.²

The history of the general questions of railroad policy and legislation may be pretty sharply divided into two periods. Railroad construction formed the subject of discussion and action in the first period, railroad combination in the second. The dividing line between the two periods falls in the years 1845–48.

¹ Equally good in its day—in some respects even better—was the evidence collected by the Royal Commission of 1865–1867. The investigations of the Joint Select Committee of 1872 were less thorough, though their report was an able document. The work of the Committee of 1853, good in its time, is too old to have much present interest.

² An admirable book—probably the most careful investigation of railroad problems, from the standpoint of political science, which has anywhere been made. Its value must be admitted even by those who differ from many of its conclusions.

The first railroad charters were in almost all respects modelled upon canal charters. Of such models there was an abundance. England's system of internal navigation was far beyond that of any other country in completeness. It is said in a recent parliamentary paper that three fifths of the railway stations in the United Kingdom are subject to water competition. It was the strength of this canal interest that formed the chief obstacle with which the promoters of the earliest railroads had to contend. The canals had a monopoly, and they were naturally unwilling to let it go. But they carried their monopoly power too far. Had they simply attempted to obstruct the railways, they might have delayed their construction for years. But they squeezed the public too hard at the same time ; and this extortion created a sentiment against the canals, which enabled a railway charter of importance to slip through in the year 1826. This was for the railway between Liverpool and Manchester. There were two canals connecting these cities ; they had a monopoly of the available water supply, and therefore feared no further canal competition. They acted in harmony, charged what rates they pleased, and made annually cent. per cent. on the capital invested in them. They could afford to oppose the railway.¹ It needed a politician like Huskisson to carry the charter through in the face of such obstacles ; and he had to spend \$350,000 to do it. But the victory was won, once for all. No sooner was the Liverpool and Manchester line opened than the public enthusiasm in its behalf was so strong that the canal interests were unable to make a similar fight against other roads proposed.

¹ By a curious reversal of history, the railroads between Liverpool and Manchester are now engaged in opposing a ship canal which threatens to interfere with their monopoly.

A recent writer has said of the English canals: "Excessive charges and monopoly rates were as to them unknown." The facts will by no means warrant such a statement. The evils of which people now complain as peculiar to railroads had already shown themselves in canal charges.

It was at first supposed that a railroad would be used like a canal, individuals furnishing their own cars and motive power. The clauses in the charter with reference to facilities and rates were drawn up with this idea. It was soon seen to be false. Competition between different carriers on the same railroad was impossible. Could competition between different railroads be secured instead?

It is to the credit of English statesmen that they did not deceive themselves in this respect. They learned more in a few years from the workings of a few miles of railroad than the general public has learned from all the railroads of the world in half a century. They recognized that competition could not be relied upon or aimed at with any hope of success. As early as 1836 Mr. Morrison of Inverness delivered a remarkable speech,¹ in which he made the points, that railroads must naturally be a monopoly; that competing roads will combine; that parallel roads are a waste of capital; and that fixed maximum rates are useless. These were good principles; but they were not acted upon. There were not men enough in Parliament who took the matter really to heart. There were a few violent anti-railroad men, a few energetic railroad men, and a great body of men who vaguely felt that something ought to be done, but shrank from doing anything in particular. Speeches like those of Mr. Morrison

¹ Hansard : 3d series, vol. 33, pp. 977-993.

were unsatisfactory to extremists of both sides, and did not rouse the moderate men to action.¹

In the years 1839-1845, several attempts were made to secure railroad legislation, Mr. Gladstone taking an active part in these matters. Beyond a declaration of the right to revise rates, and even to purchase the railroads for State management in the remote future, nothing was actually accomplished. It is needless to say that this has remained a mere declaration and nothing more. One or two experiments in the way of railroad commissions made during these years had worse than no result.

Free railroad competition was meantime being tried and found wanting. It was not tried on purpose, or because Parliament believed in the principle. It was because so many speculators wanted to build railroads, and Parliament had not the moral courage to refuse them charters.

The early experience of England was different from that of most other countries in this respect, that people were readier then than afterward to invest their money in railways. The question of subsidies never came up, because people needed to be discouraged rather than encouraged. It is not quite true to say that England was opposed to railroad subsidies on principle, for in Ireland,

¹ From this point on, the views advanced in this chapter are so different from those held by Mr. Adams (*Railroads*, pp. 82-94) that a word of explanation is necessary. The points at issue are in large measure questions of fact rather than of opinion. At the time when Mr. Adams wrote, the investigation of 1881-82 had not begun. In the light of the new evidence then brought forward, he must have changed his opinion on many points. On the other hand, at the time when he wrote, the results of the work of the Committee of 1872 were generally overestimated; and he had not the means of correcting this overestimate. Finally—to hazard a personal opinion—Mr. Adams is too active and rational a man to be quite ready to accept some of the facts of modern English history. He insists on trying to find intelligible theories to account for actions which were simply the result of unthinking *vis inertiae*.

where help was needed by the railroads, they were subsidized. In England they did not need any such help, and did not ask for it.

For the time being the competition was utterly reckless. Up to the end of 1843 there were 71 separate roads averaging a little less than 30 miles in length. In 1844 they came down to a 15-mile average; and in the four years 1844-47 there were chartered 637 separate roads with a total authorized length of about 9,400 miles. No less than eleven projects were laid before Parliament for lines of railway through a single valley where only one could possibly go. These were not attempted under any general railroad law, but each road required a special act of Parliament. What was more, each special act of Parliament was drawn up by itself, and contained hundreds of provisions, mostly useless trash, as to what the railroad might do under all conceivable circumstances. The volume of work thus created threatened to take up the whole time of Parliament and leave no room for other business. They tried to delegate the work to a commission; but then they insisted on reviewing all the decisions of the commission and reversing some of them, so that there was no saving here. Some relief was obtained by the "Clauses Consolidation Act" of 1845, which prescribed a form for railway charters, and rendered it unnecessary to go through all the 350 separate clauses for each of 600 different railways.

But the first real relief to the legislators was obtained in the crisis of 1847, which cured the English public of all belief in reckless competition in railroad building. This crisis was much more distinctly due to railroad speculation than any other ever has been, not even excepting the present crisis in the United States, with which it has many points in common. It was a hard lesson; but it was

thoroughly learned, and did not need to be repeated. It marked the transition to a new phase of railroad policy; the transition from a policy of competition to a policy of combination.

Railroad combinations of importance may be said to have begun in 1844; at any rate, they then first attracted much public attention. In 1845 the Board of Trade made a report to Parliament on the subject of amalgamation, taking the ground that it was right for continuous but not for competing lines. In 1846 a special committee of Parliament considered this subject, and took what was for that time advanced ground. Their conclusions were that companies, by pooling arrangements, can produce all the evils of amalgamation with none of its advantages; that by obtaining concessions from the companies in return for allowing them to amalgamate, the public interest can best be served; and that even the amalgamation of railways and canals may be allowable, provided the railways engage to keep the canals in repair. No distinct action was taken by Parliament on this report.

Another committee on the same subject was appointed in 1853; Cardwell and Gladstone were its leading members. They made a strong effort to do something, but found it easier to explain the troubles than to find remedies. They hoped to encourage "running powers" by which one company should have the right to run its trains over the lines of other companies. Serious obstacles met them in the attempt. Nevertheless, if any thing at all was to be done, it must be done in this way. A railroad which had a London connection must not be allowed to freeze out one which had no such connection; otherwise the London roads could compel the country roads to unite with them on their own terms. This was the one

point which the committee seized most clearly; and the bill which they brought in and which became a law under the title of the "Railway and Canal Traffic Act, 1854," was conceived with this view—to protect the local roads in their through business. It provided, first, that every company should afford proper facilities for forwarding traffic; and, second, that no preferences should be given.

This law had a wide and, on the whole, beneficial effect. It became the basis for numerous decisions on the subject of railroad rates; the details of its application to these we shall discuss subsequently. But it did not have any appreciable effect in preventing amalgamation.

From 1853 to 1872, Parliament suggested a great many things, and accomplished nothing. Least of all did they check the tendency of the roads to consolidate. Much was expected of the Royal Commission of 1865-67. But nothing came of it. They collected a mass of valuable material, and wrote a tolerably good report; but when they came to draw their inferences, they could only say, in general, that the existing state of things seemed likely to continue, and that they saw very few means of helping it.

Another committee was appointed in 1872, and this time, for a wonder, something was actually accomplished. In principle they did not depart from the lines laid down by their predecessors. They brought forward no new views, and, in one sense, no new laws. They simply provided means for carrying out the old laws and the old views. The outcome of their work was an act for carrying into effect the provisions of the act of 1854.

The act of 1854 had never had a fair chance. The Committee of 1853 originally intended that questions under it should be decided by the Board of Trade.

Through the influence of the railways this had been so amended in the House that such questions came under the jurisdiction of the Court of Common Pleas. As many of these questions were of a technical character, the court declined to take cognizance of many things which Cardwell had intended should come within the scope of the act. Here was a real difficulty. The Commission of 1867 had made a feeble effort to meet it; the Committee of 1872 grappled with it boldly. They recommended the appointment of a special Railway Commission, provisionally established for five years, to take cognizance of a variety of cases under the act of 1854, whose decisions were to have a judicial force. They were further to decide many cases where the interest of different railways conflicted. It was thought that before such a commission the public and the railways could meet on even terms. Their bill was passed in 1873.

With the act of 1873 the general railroad legislation may be said to have closed. The movements which the public had feared for thirty years had now pretty much expended their force. Amalgamations which were confidently expected in 1872 did not take place, after all. Joint-purse arrangements became less important instead of more important, because railroads found that they could maintain rates without them.

It is not exactly true to say that "in Great Britain the discussion of the railroad problem may be considered as over for the time being." The railroad problem has ceased to be a bugbear; but it has become all the more a question for practical discussion. Vague fears with regard to the growth of the railway power have given place to pointed complaints as to its abuse in individual instances. The period of general legislation has passed. Mr. Adams

is right in saying : " As a result of forty years of experiment and agitation Great Britain has on this head come back very nearly to its point of commencement." He is not quite right in adding : " It has settled down on the doctrine of *laissez faire*." It might better be said that it has settled down on the policy of specific laws for specific troubles.

The idea of a railway commission was by no means new. As long ago as 1840 it was felt that some such authority was necessary. In that year powers were given to the Board of Trade not unlike those now exercised by the Massachusetts Railroad Commission. These powers were further defined in 1842. The Board of Trade was as well adapted to the work as any body then existing. It had for years past performed similar functions in connection with shipping. It failed where the Massachusetts Commission succeeded, not because of a difference in the law, but because the English public sentiment with regard to railroads was not sufficiently active to give such a body the necessary moral support to make up for lack of legal authority.

In 1844 another commission was appointed with more specific powers. Their special duty was to make preliminary reports to Parliament on applications for railroad charters. They tried to do their work well, but were beset by difficulties on all sides. Railroad projectors hated them ; Parliament itself was jealous of them. After a luckless existence of about a year, this board was abolished. It really died of too much work and too little pay. In 1846 Parliament tried the experiment of a railroad commission of another kind. It offered first-rate salaries, and secured well-known men ; then it avoided all causes of offence by not giving them any powers. This lasted five years. Its fate was the reverse of that of its predecessors ; it died of

too much pay and too little work. Thus ended the first series of experiments in railway commissions.

We have seen what were the events which led to the passage of the Regulation of Railways Act in 1873. The commission appointed under that act was to consist of three members ; one of them a railroad man, one a lawyer. They received a salary of £3000 each. They were to decide all questions arising under the act of 1854 and subsequent acts connected with it. They were further empowered to arbitrate between railroads in a variety of cases ; to compel companies to make through rates which should conform to the intention of the act of 1854 ; to secure publicity of rates ; to decide what constitutes a proper terminal charge ; and some other less important matters. On questions of fact their decision was to be final ; on questions of law it was subject to appeal. The Railway Commissioners themselves were to determine what were questions of fact and what were questions of law. Subsequent acts have made but slight changes in these powers.

The commission consisted of able men—Sir Frederick Peel, Mr. Price, formerly of the Midland Railway, and Mr. Macnamara ; the last-named died in 1877, and was succeeded by Mr. A. E. Miller. They went to work with energy, and in a spirit which promised to make the experiment a signal success. And it was at first supposed to be such a success. People judged by the reports of the commission itself. And they were the more prone to believe these reports, because it was so desirable to find an easy solution of perplexing questions of railroad policy. Mr. Adams, writing in 1878, said: "The mere fact that the tribunal is there, that a machinery does exist for the prompt and final decision of that class of questions, puts an end to them. They no longer exist." That repre-

sented the general public opinion on the subject at the time; it represents the general impression in America down to the present time.

In 1878, the very year when Mr. Adams wrote, the original term of the commission expired. People supposed that it would be made permanent. Instead of that, the renewals have been for much shorter periods, leaving the commissioners a precarious tenure, and showing dissatisfaction somewhere.

A parliamentary investigation on railroad rates in 1881-2 showed the grounds of dissatisfaction only too clearly. The testimony revealed a state of things almost unsuspected by the general public, and giving an entirely different explanation of the fact that the commissioners had so few cases to deal with. The substance is, that the power of the commission satisfies nobody. It has power enough to annoy the railroads, and not power enough to help the public efficiently.

The Railway Commission was a court. Not an executive body, but to all intents and purposes a court of law. And in establishing this new court, in addition to those already existing, Parliament had two ends in view: 1. To have a tribunal which would and could act, when others would or could not. 2. To avoid the expense, delay, and vexation incident to litigation under the old system. Neither end was well fulfilled.

i. The commission could not act, partly from want of jurisdiction, partly from want of executive power. Its jurisdiction did not cover by any means the whole ground. The provisions about terminals, arbitration, working agreements, etc., amounted to very little. Its real power was under the act of 1854. It could under this act require companies to furnish "proper facilities," and

it could prevent their giving "preferences." But it could *not* compel a company to comply with special acts or special provisions of its charter. This was a serious difficulty, because the question of proper facilities was closely connected with charter requirements, and the railroad could almost anywhere raise the point of want of jurisdiction.

Nor could it enforce its decrees. Passive resistance of the railroads and jealousy on the part of the old established courts, combined to produce this effect. For instance: under the act of 1854, if the railways refused to comply with the decisions of the Court of Common Pleas, they were liable to a fine of \$1,000 for every day's delay. The London, Chatham, & Dover Railway refused to comply with one of the commission's decisions, and claimed that they were not liable to any such fine, although all the powers of the Court of Common Pleas, under the act of 1854, had been transferred to the Railway Commission by the act of 1873. The Court of Exchequer actually sustained the railroad; and it was not until 1878 that by a decision of the Queen's Bench the Railway Commission really had the power to do anything if a company chose to disregard its orders.

The injunctions of the commission at best only affect the future; for any remedy for the past there must be a new complaint and trial before a regular court. And so it often happens that a railroad, after exhausting all its means of resistance, obeys the decision of the commission in reference to one particular station, without taking any notice of it at other stations where the same principle is involved. Thus, in the case of the manure traffic of Aberdeen, after long litigation the rate was decided to be illegal. The railroad then reduced its Aberdeen rates,

but continued its old schedule of charges at other points on its route where there were not organized interests strong enough to make a fight.

On the face of the act of 1873 the decisions of the commission, as to what were questions of fact or questions of law, appeared to be final. But by writ of mandamus from a court of appeal, the decision on this point could be at once taken out of the hands of the commission by compelling them "to state a case," which could then be made the subject of action in the higher court. So this important power was made of no effect.

2. Complaints before the commission are not quite so slow or costly as they were before the courts, but they are bad enough to prevent most men from undertaking them. Sir Frederick Peel himself admits that the expense frightens people away from making complaints. But this is by no means the worst. The testimony before the Parliamentary Committee of 1881-82 is full of matter to startle those who argue that because there are few complaints before the commission there are few men that have grievances. Men have good reason to think twice before they enter a complaint. In the Aberdeen manure case, already referred to, the Aberdeen men, successful at every point, lost more money than they gained. Every important case is so persistently appealed that the original promptness or cheapness of Railway Commission practice counts for nothing. But the indirect results are yet worse. A complainant is a marked man and the commission cannot protect him against the vengeance of the railroads. A town fares no better. It complains of high terminal charges, and the company retorts by raising the local tariff for that place 100 per cent.¹ A coal mine

¹ Evidence, 1881, qu., 420, 421.

complains of freight rates, and the company refuses to carry for it on any terms; it has ceased, it says, to be a common carrier for coal. Even the War Department is afraid. It has its grievances, but it dares not make them public for fear of reprisals.¹ "It is quite clear," says the Secretary of the Board of Trade, "that it is a very formidable thing to fight a railway company."

It is not easy to see what can be done in the face of these difficulties, so different from any thing which we see in most American States. Our commissioners, with fewer powers, have infinitely more power. The reason is, that in America to defy such an authority involves untold dangers, public sentiment being irritable and unrestrained; whereas in England it involves no danger at all, public sentiment being long-suffering and conservative.

The lawyers say, Strengthen the legal element in the commission. Some of the railroad men say so too, because they think that a commission formed on the model of the old courts would interfere no more than the old courts. On the other hand, many men desire the appointment of a public prosecutor to relieve individuals of the danger and odium of bringing complaints; or that chambers of commerce may be allowed to undertake such prosecutions. Others go still further, and urge that the powers of the commission be increased, and that they be allowed to determine, on general grounds, what constitutes a reasonable rate. The commission itself would be glad to do that. But such a thing, however cautiously carried out, would involve the Granger principle of fixing rates. It seems quite unlikely that Parliament will make any of these proposed changes, except to give chambers of commerce the right to prefer charges.

¹ Evidence, 1881, qu. 5965.

We have dwelt on the dark side of the picture, because there is a general impression in this country that the English Railway Commission is a complete success. It must not be inferred that it is a complete failure. It has in the first nine years of its existence passed judgment on 110 cases. Only 17 of these have been appealed, and in 11 of them the commissioners have been sustained. The decisions have, as a rule,¹ been marked by good sense and impartiality. The direct good to the complainants may have been very small, but the indirect good to the public was doubtless great. The commission has made serious and generally successful efforts to enforce a law in cases where it would otherwise have been a dead letter. These particular cases may have given more trouble than they were worth. But the very existence of such a power constitutes a check upon arbitrary action in general. We cannot assume, as many do, that the few complaints preferred before the commission represent any thing like the amount of well-founded grievances. But we can assume that the chance for such complaints to be made and heeded makes the railroad managers more cautious in giving occasion for them. Although no one is fully satisfied with what the commission has done, the great majority of shippers are obviously of the opinion that it has prevented much evil which would otherwise have gone on unchecked.

Passing from the means of dealing with the complaint to the substance of the complaints themselves, we find, in England as everywhere else, two distinct sets of grievances, involving totally different treatment. Some charges are complained of as exorbitant in themselves, involving extortion. Others are complained of as unequal, involv-

¹ With exceptions to be hereafter noted,

ing discrimination. When railroads were first chartered, people feared the first evil and hardly thought of the second. They tried to prevent extortion by a very definite system of maximum rates and fares. For almost every conceivable sort of goods the charter prescribed how much toll the railroad might take for use of the way, how much for furnishing the motive power, and how much for furnishing the cars; also what rates it might charge for all these services combined.¹

It is hardly necessary to say that these provisions were of little effect. There were several reasons for this. First, the railroads could carry much cheaper than was at first expected; so that most of the maxima were too high to be of any practical effect. Second, the whole system of provisions concerning equal mileage rates, terminals, classification, etc., is quite inapplicable to the new conditions of railroad service which have grown up since the original charters. Every careful student of the question, from Morrison, in 1836, down to the committees of 1872 and 1882, has come to the conclusion that fixed maxima are of next to no use in preventing extortion.

Still, the system of charter maxima is not absolutely without effect. A few articles have risen greatly in value since the time of the charters. The charter maxima for manure were very low; and an Aberdeen Company brought suit to compel the railroad to carry highly valuable artificial fertilizers under the old manure rates per ton. The railroad tried to take refuge under the inconsistencies

¹ It is worthy of notice that these rates were not based upon cost of service, but mainly upon the value of the goods, and that certain articles when destined for export were allowed a much lower maximum rate than the same article when destined for home consumption. In the charter of the Stockton & Darlington Railway the maximum for coal in general was 4d. per ton per mile, but for export coal only ½d.

of the charter itself, but was not allowed to, and the Aberdeen company won their case. But instances like these are infrequent.

A more important case is that of certain short-distance rates, especially on agricultural produce, where the railroads make heavy terminal charges of questionable legality. The number of instances of this kind is very large. The source of the trouble is this: while the train expenses per ton moved have decreased enormously, the station expenses have, on the whole, risen; in some cases they have risen enormously. Not only is the old schedule relatively unfair, it is, in some instances, absolutely unfair to the roads, because it does not enable them to meet increased station expenses on short-distance freight. There is a sharp conflict now going on, in the courts and in Parliament, concerning the right of the railroads to indemnify themselves for these expenses.¹ The law, as it stands, seems to favor the shipper; but it also seems likely that the railroads can justify their action on equitable business principles. If so, business principles are likely to prove mightier than a half-obsolete regulation in a charter.

The plan of trying to keep down rates by a limitation of dividends has been often proposed, but they have had too much sense to believe in it. Government revision of rates has been tried to a slight extent, but the authorities abstained from putting the new maxima very low, and the revision really amounted to nothing. The *right* to revise rates, quite independently of any charter provisions, has always been insisted upon by Parliament, but even Prof. Hunter, the Simon Sterne of English investigations, admits that "it would require an extremely strong case to justify interference." There is no present likelihood of this right being exercised.

¹ The much-vexed question of "station terminals."

The subject of exorbitant rates is really a subordinate one. It is the question of *differential* rates that most agitates the public mind; and it comes up in almost exactly the same forms which it takes in America. One set of low rates arises from competition of different routes, another from special contracts to develop business.

As we have already seen, the low differentials for competing points do not arise from the competition of railroads with one another; at least not to any great extent. They arise from the competition of water routes. The long line of sea-coast and the great number of navigable rivers and canals make this a more important element in England than anywhere else. The committee of 1872 say that there is a sea competition at about three fifths of the stations in the United Kingdom. And thus it happens that while there is every year less and less competition between railroads, there is every year more and more complaint of discrimination.

The railroads have tried hard enough to control the water routes. They have gotten possession of competing canals, sometimes by methods whose legality was doubtful. In the case of natural waters they have tried to get control of the shipping or of the harbor facilities; and it is said that one railway, the North-Eastern, running to all points on the Yorkshire coast and on the Tyne, has so far succeeded as to control competition by routes on the open sea. The water is free, but the railroad controls the landing-places.

But there is one large and constantly increasing set of water routes which the railroad cannot control—the routes of trade between London and foreign countries. The western and northern railroads want their share of the

traffic between America and London ; the southern and eastern roads want their share of the traffic between Continental Europe and London. The railroads enter this contest under some decided disadvantages. It is the case of a combined water and rail route competing with an all-water route which is not essentially longer in distance. The distance from New York to London *via* Glasgow or Liverpool is about the same as *via* the Thames. The distance from Boulogne to London by Folkestone is not much shorter than from Boulogne to London by direct steamer. And the rail route involves one extra handling of the goods. The direct water rates are already so low that the railroad's share of a combined rate must be very small indeed ; much smaller than that they charge on their inland business for the same service.

Thus, the rate from Glasgow to London on the beef of American cattle slaughtered at the wharf is 45*s.* per ton, while for Scotch meat the rate for the same service is 77*s.* Foreign hops are charged 17*s. 6d.* per ton from Boulogne to London ; English hops are charged 35*s.* per ton from intermediate points. Norway lumber is conveyed at about half the rates charged for English lumber of the same quality. There are hundreds of such examples which might be given. Of course English producers feel very indignant at such discriminations ; and they feel worse because it all seems to be for the benefit of foreigners. The same sort of feeling was shown here before the Hepburn Committee by the New York men, who complained that the railroads carried cheaper for citizens of *other States* ; but in England, where it is a case involving other *nations*, matters seem far worse. These competitive through rates appear to the English public like a premium on imports against home production.

Special rates to develop business have grown up in the same way as in America; it is hardly necessary to cite instances. The Midland Railway alone has thirty million such rates. They are rarely based on personal favoritism in any open or outrageous way. It is certain localities or certain lines of business which the railroads favor, as against other localities or trades.

The attempt at state control of differential rates began about the time when railroad consolidation became important. By act of 1845 the companies were allowed to vary their charges at will within the maxima, but must charge all persons the same rate for the same service. This position was reaffirmed in the act of 1854, by which the railroads were forbidden to grant undue and unreasonable preferences. But this act left it to the Court of Common Pleas to determine what constitutes an undue preference. This jurisdiction was transferred to the Railway Commissioners in 1873. The Court of Common Pleas took up the matter most unwillingly. In every possible case it tried to shift the responsibility upon other courts. One of the great difficulties about obtaining redress under the act of 1854 was that the complainant would be sent from one court to another, and each would be unwilling to do any thing. In the years 1854-73 there were only twenty-nine cases under the act, and many of these were not under the section dealing with discriminating rates.

From the outset the court enforced the point that there should be no *personal* preferences; that under exactly similar circumstances all shippers should be treated alike. The railroads could make as many special rates as they pleased, but they must be given to everybody under the same conditions. They took this position so decidedly

that they stopped the practice of personal favoritism almost entirely. Previous to 1854 there had been many complaints of this kind; afterward we find very few. Rebates, such as there were, were given secretly; when they were discovered the companies made private settlement for back differences with the parties aggrieved. The fact that a rate was kept secret was considered *prima facie* evidence of personal preference.

On other points the decisions conflicted, until the advent of the Railway Commissioners. Since then they have all tended in one direction. It was held in the case of *Evershed vs. L. and N. W.*,¹ that the mere existence of competition in one case and not in another, did not justify any difference of treatment. Two years later in the case of *Budd vs. L. and N. W. Railway Co.*,² the Court of Exchequer asserted as law what is known in America as the "short-haul" principle, namely, that the whole distance between any two points must not be charged less than a part of it. Two years later, in the very important case of *The Denaby Main Colliery Co. vs. M., S., and L. Railway*,³ it was held that the greater distance must be charged actually more. A year later, in the case of *Richardson and others vs. Midland*,⁴ these principles were applied in comparing rates not on the same route, but on different branches of the same road. And, finally, in the case of *The Broughton and Plas Power Coal Co. vs. Great Western*,⁵ it was held that the

¹ Third Rep. Railway Commissioners (1875-6), p. 3. These references are to the series of parliamentary reports, not to the law reports covering the same ground.

² 36 L. T., N. S., p. 802. Not a Railway Commissioners' case.

³ 7 R. Com. (1880), p. 5.

⁴ 8 R. Com. (1881), p. 6.

⁵ 10 R. Com. (1883), p. 1.

differences in charge must be greater than the difference in cost ; that is, that the railroad must make more profit on through shipments than on local ones.¹

These cases, and others involving the same principles, show : 1. That the commissioners are acting upon the theory that rates should be based upon cost of service.² 2. That they propose to apply it to an extent which has proved impracticable wherever tried, whether by Bismarck or by the Grangers. 3. That they intend to use it as a protection to vested rights, against the levelling tendencies of the railroad system. American courts generally content themselves with trying to use the cost-of-service principle to prevent the creation of inequalities. The English courts use the same principle to prevent their abolition. This is the explicit intent of the Denaby Main Colliery decision.

The Commissioners' lack of power has prevented them from doing the harm that any general application of these principles would produce. It has also prevented the proof that the principles were impracticable, which would so soon make itself felt if they were rigidly applied. But they have caused things to be looked at in a wrong light. The railroads, finding it of no avail to plead value of service or necessities of competition as the reason for inequality, attempt to prove a difference in the cost of service, where it does not really exist. And so we have the spectacle of shippers, courts, and railroads attempting to stretch a wrong principle to cover cases to which it does not apply.

But there were a great many cases where the standard

¹ Not more in proportion, but more on each consignment of a given quantity.

² The Caledonian Railway was forbidden to charge more on cannel coal than on less valuable kinds.—2 R. Com., p. I.

was not elastic enough to suit the facts, and the facts too stubborn to be squeezed down to the standard ; and this led to the appointment of the parliamentary committee of 1881-82 to consider the subject of discriminating rates. The twenty-seven members of the committee represented a great variety of conflicting interests ; four of them were railroad men. After hearing a vast mass of testimony, this committee came to a different conclusion from the commission, and a more sensible one. When the committee came to make up their report two drafts were presented, one decidedly favorable to the railroads, the other criticising them moderately. The first was rejected by a vote of 12 to 10 ; but the second was so amended as to bring in many of the ideas of the first ; and the final report as it stands defends differential rates, and does not regard cost of service as the sole standard. The report is negatively rather than positively good ; but as compared with recent English decisions, it is a great advance. No action was taken by Parliament upon it ; in fact, as far as concerns our present subject, it calls for no action. It simply declared that there were no general grounds for interference.

The present state of things may be summed up as follows :

1. The roads may make what special rates they please ; but if they make a rate for one man they must extend the same privilege to all others in like circumstances. If they have been secretly paying rebates to one shipper, they may be compelled to refund to any other shipper similarly placed, the same rebates on all his shipments since the special contract with the one shipper began.

2. It is held by the Railway Commissioners that two shippers are similarly placed and must be similarly treated

when the cost to the railroad of handling the goods for one is the same as for the other; and, conversely, unless some special reason can be shown, the railroad has no right to put a less favorably situated shipper on an equality with a more favorably situated one.

3. But the last parliamentary committee has refused to indorse these principles, and has said that "a preference is not unjust so long as it is the natural result of fair competition."

CHAPTER X.

RAILROAD POLICY IN FRANCE.

Traditions of government activity—General scheme adopted in 1842—Gradual consolidation under six companies—Legislation of 1859—Government guarantees of interest—Local roads—Attempt to combine them for speculative purposes—Movement in favor of state ownership—Decree of 1879—Financial difficulties—Failure of the project—Contracts with the companies, 1884—Mileage and dividends—Effects of the French system upon construction, traffic, and rates.¹

THE traditions of Continental Europe all pointed toward government monopoly of the means of transportation.

There is one respect in which England and America are like one another, but sharply different from France, Germany, or other European countries. It is in the way in which people in general are disposed to regard government interference. The English and American maxim is that whatever can be done *without* government, should be thus done. The continental principle is that whatever can be done by government, should be. It has become a commonplace saying that our Anglo-American idea of liberty is not developed in Continental Europe. When a Frenchman speaks of lib-

¹ French railroad literature is full and valuable, but unfortunately not easy of access to American readers. The great authority is A. Picard: "Les Chemins de Fer Français," 5 vols., Paris, 1884. This is nothing less than a well-digested collection of all important public acts and utterances of French railroad policy—as nearly as possible in their original form. The works of Duverdy and Jacqmin are also of great value.

Much use has been made of the *Annales des Ponts et Chaussées*. The *Revue Générale des Chemins de Fer* is more purely technical in its character.

erty, it is not so much freedom from interference with his own movements that he seeks, as the right and power to interfere with other people's movements. What he really wants is political power. A party may call itself liberal or republican; but when it gets into power it governs about as strictly as its predecessors. Sometimes there is a monarchy, sometimes a democracy; but there is always a bureaucracy—a government by office-holders.

This habit of governing and being governed has resulted in much better state work, and much worse individual work. On the continent of Europe private enterprise at best was timid. In many countries it seemed hardly possible to have railroads at all unless the state took the initiative. The state controlled the roads and canals. It had managed the post-office for centuries. In due time, it took up the telegraph as a branch of the post-office. People had looked to it to take up the railroad system as a branch of the road and canal system, in exactly the same way that it afterward took the telegraph.

This was not done; there were financial reasons in the way. To build a system of railroads involved a somewhat speculative expenditure of capital, on a scale sufficient to frighten conservative statesmen. Small states with good credit might undertake something of the kind. Large states, like France, Austria, or Prussia, did not venture to do so. They adopted a policy of subsidies to encourage private companies, for without such subsidies much necessary work could not be done at all. In return for these subsidies, they reserved more or less important rights of state control.

Thus the early history of European legislation was determined not so much by the character or wishes of the different governments, as by their financial condition. The

small states adopted a policy of at least partial government ownership, best typified in Belgium. The large states adopted a policy of support and control without actual ownership. This was most consistently carried out in France. Austria (and afterward Italy) for a long time stood somewhat near to France in their general policy; Prussia inclined more toward the Belgian system. Since 1870 there has been an almost general movement away from the policy of state support and control, and toward that of actual ownership. The difficulties of control have been found greater, the financial risks of ownership less. Above all, the governments have been roused to the idea of the supreme importance of a railroad policy as an element in the industrial and even in the political life of nations, and have felt that nothing short of complete ownership and direct management of railroads would give them the power to which they aspired.

So much for the general influences which have acted everywhere. It is hardly necessary to say that each separate nation had a railroad history of its own, in which the traits of its national character were reflected.

This was strikingly the case in France. A Frenchman cares very much more for systematic arrangement than an Englishman, and very much less for original and untrammeled business activity. The system of roads and waterways existing in 1830 suited the French nation exactly. They were so arranged that they looked well on the map; so classified that each bore its exact proportion of importance, whether national, departmental, or local. They were regulated from Paris with ease, and yet with military precision. Never was there so good a corps of engineers for carrying out government programmes as that which was trained at the École des Ponts et Chaussées in Paris.

They were men of first-rate training and high general standard of talent. Few of them were men of genius or originality in the highest sense of the word. Yet this very absence of rule-breaking genius probably rendered them all more efficient as a body of trained public servants.¹

France was slower than some of her neighbors in taking up railroad construction, probably because her roads were so good and her engineers so well drilled. Nor was the nation at all inclined to let a railroad system grow up piecemeal. They wanted a comprehensive scheme or none at all. The very first thing done (except to charter a few horse-railroads in 1826-32) was to appropriate money to pay the government engineers for laying out a general system of railroad lines. When this survey was completed, they next took up the question of principles of ownership and management. While other countries were acting and experimenting, France was reasoning. There was a long series of debates in the years 1837-1840. Nothing was settled until 1842. The author of the plan finally adopted was Thiers. The state was to contribute about \$50,000 per mile, and own the road-bed. Private enterprise was to be called upon for whatever was necessary (about \$40,000 per mile) for track, equipment, buildings, etc. After some forty years the whole was to revert to the state.

If the French had delayed a long time, they had at any rate succeeded in maturing plans, both of engineering and of legislation, which they have since carried out pretty consistently. Both in the arrangement of the lines and in their relation to the government, they have maintained, with variations of detail, the form contemplated from the

¹ M. M. v. Weber : "Nationalität und Eisenbahnpolitik," pp. 30, 31.

first.¹ This is more than can be said of any other country.

Under this plan thirty-three different companies were chartered with about twenty-five hundred miles of authorized line. Railroad building went on rapidly until the revolution of 1848; it was then checked so suddenly that the next three years show an actual decrease in the mileage in operation. With the accession of Napoleon III. in 1851, there came a new era of railroad activity, which lasted until the crisis of 1857. This activity was stimulated by a change in the charters, extending their duration in general to ninety-nine years from date of alteration. Had the original plan been followed out, the lines would now be reverting to the government. As it is, they will remain in private hands till the middle of the twentieth century.

The crisis of 1857 produced so complete a stoppage of railroad building that new legislation was resorted to. This stoppage and this supplementary legislation were an almost necessary consequence of the French system. The lines had been laid out with the idea of avoiding all waste of capital. They were traced by government engineers; each part stood in its proper relation to the whole. Parallel roads were forbidden as a matter of course. At first this worked extremely well. It forced the numerous independent companies to work in harmony with one another. But it rendered the process of consolidation all the easier. Soon after the accession of Napoleon there were but eleven independent companies. In a few years more the eleven were reduced to six—five radiating from

¹ Léon Aucoc: "Conférences sur l'Administration et le Droit Administratif," vol. iii. A résumé of the part bearing on railroad policy has been published in the *Journal of the Statistical Society* (London), vol. xliv., pp. 496-504.

Paris in different directions, the sixth in the extreme south. Each had a monopoly in its own district. For the through traffic between the great centres there was very little competition, either actual or possible. This was a state of things which has not prevailed to the same extent in any other actively industrial country. Its effects were distinctly bad. It had the effect of making the roads neglect the development of local business by branch lines. The through business brought a greater rate of profit than the local or branch-line business was likely to. Not being afraid of interference in the former, they felt no necessity for securing the latter. This is why the stoppage of railroad construction in 1857 was so complete.

New railroad construction was necessary for the development of the country. In order to secure it the government had recourse to a system of guarantees of interest. The general scheme for this purpose was devised by De Francqueville in 1859. The roads under profitable operation were set apart under the title of "old net-work" (*ancien réseau*). The lines which were unprofitable, and the far greater number of lines not yet constructed, were together classed as the "new net-work." Each of the six companies undertook the construction of a large number of new lines in its own district. Money for their construction was raised by bonds on which the government guaranteed four per cent. interest plus a contribution to a sinking fund which should be sufficient to pay off the bonds at maturity. These interest charges did not constitute a first lien on the income of the companies. They were not called upon to pay any of this interest unless the surplus on the old net-work was sufficient to pay such dividends as they had been paying in the past, plus certain other fixed charges. The amount of this "reserved rev-

enue" was fixed by special agreement with each company. Any thing in excess of this went to pay interest on the new bonds or to repay the government for such interest previously advanced. When the companies were no longer indebted to the government, or forced to have recourse to its guarantees, they were then allowed to increase their dividends beyond the percentage fixed by agreement.

The provision that every thing should revert to the state after ninety-nine years, or thereabouts, remained unchanged. There was an additional provision giving the state, after fifteen years, the right to buy up any or all of the roads, on terms favorable to the stockholders.

The legislation of 1859, in its main provisions, remained unaltered until 1884. The changes of 1863 and of 1868-9 were of minor importance. The system as a whole was more advantageous to the railroads themselves than to the government or the country. The guarantees of interest made the securities extremely valuable, and lessened the necessity for enterprising management. Some roads payed off their obligations to the government, and got the full profit from lines which they had themselves run no risk in constructing. Others found it hopeless to try to meet these obligations at all; they then pocketed their guaranteed dividends, and let the government pay interest without any prospect of repayment. The companies were literally in the position "heads I win, tails you lose."

No scheme arranged at Paris could meet all local demands; and it was to satisfy such demands that a measure foreign to the general tenor of French legislation was put in operation in 1865. It provided for the construction of local roads, not belonging to the great companies. The local authorities were given the right to subsidize such

roads largely. It was provided that they were to be inexpensively built, and that they should be so arranged as to form mere branches; not to be combined into through routes which might interfere with the monopoly of the six companies.

Unfortunately they did one thing which rendered it doubtful whether the last provision would be carried out. They had these local roads built with standard gauge. The result was what might have been expected. After the downfall of the empire, when the central authority was weaker, the prohibition to combine was practically abandoned. The scattered local roads now became possible competitors of the main systems, in case connecting links should ever be built. The cheapness of these local roads made the danger all the greater. In 1875 a Belgian named Phillipart tried the experiment. He was an able operator, and had succeeded in a similar attempt in his own country a few years before; but in France the powers opposed to him were too strong, and in 1876 he was completely beaten. He had succeeded in distorting the local roads from their true purpose, and extending them into combined insolvency, without making them sufficiently effective competitors against the old roads for him to be able to levy the blackmail which he had hoped. His failure left his railroads in a condition worse, in some respects, than is that of the West Shore to-day.

These railroads lay in two main groups—one in the north, the other in the southwest. The former was almost immediately absorbed by the Northern Railroad, financially the most powerful of the French companies. The southern group, after a year or so of the most helpless misery, seemed likely to pass in the same way into the hands of the Orléans Railroad, when an agitation in favor

of direct state management made itself strongly felt, and the proposition to allow the consolidation was overwhelmingly defeated in the French Chamber of Deputies.

The movement in 1877 in favor of state ownership was probably due to patriotism more than to any other one cause. Some desired the government to have more civil power, others desired it to have more military power. They had seen the advantage accruing to Germany in the war of 1870 from its control over railroad administration. Bismarck was now engaged in still further extending government ownership in Prussia. Why should not France do the same, now that such an opportunity offered? These reasons, vigorously urged, met with all but unanimous approval. The railroads of the southwest were taken under direct state management.

This was but the beginning. France had fallen behind her neighbors in railroad building. She had but thirteen thousand miles of railroad, while Germany, with not many million more inhabitants, had eighteen thousand miles. Ten thousand miles more were needed. The companies were unwilling to build them. With perhaps two exceptions, they had reached a condition like that which existed in 1859. If the companies would not build them, said the ministers, then the state must do so. De Freycinet, the Premier, was a sanguine man, who never did things by halves. He boldly proclaimed the need of a loan of six hundred million dollars; and then, without waiting to know whether he could get it, he proceeded to lay down the detailed plan of the work. By a decree of July, 1879, the lines were determined upon, on the very grandest scale; without detailed estimates of cost.

It was easy to draw the plans; it was not so easy to secure the money. Even the French Chambers felt

serious doubts concerning the project of public expenditure on a scale like this. A little was built each year, with special credits voted for the purpose; but the lines were disconnected. The question which should be built first, was determined by the political claims of rival localities, rather than on any broad business principles. Scattered as they were throughout the country, there was nothing to do except to lease them for short terms to one or another of the six great companies, according to the district in which they happened to be situated. Nor was the state much more successful in the management of its roads in the southwest, which it had taken up in their distress. Instead of becoming a power in the railroad world by the management of these lines, it was brought into a position of weakness. They were not well situated, and did not reach Paris at all. Attempts were made to secure a Paris connection for the state by the purchase of the Orléans system; but they were futile.

Meantime financial affairs were taking a turn which was likely to put a stop to all magnificent schemes of railroad construction or purchase. The power of the French Government to raise money, whether by taxing or by borrowing, for a long time seemed unlimited, but the limit began to make itself felt as early as 1881. The mighty maker of projects and spender of money—De Freycinet—had been forced to resign in the autumn of 1880. After his departure, and under the more strained financial conditions, France no longer had the power to carry out his projects. At the same time it could not definitely resolve to abandon them. The counter-propositions of Léon Say, an able financier, were rejected. Committee after committee was appointed to consider these questions; but with no result whatever until the death of Gambetta, at the beginning of 1883.

In some respects Gambetta was to France what Bismarck was to Prussia. He had not the same political power, but he had the same kind of moral influence. This was more evident after his death than it had been during his lifetime. Though not the nominal leader, he was the real mainstay of the movement in favor of state railroads; when he died the movement lost its strength. The very men, like Raynal, who under Gambetta's influence had been strong supporters of state management, now found themselves more ready to yield to financial necessity and leave the railroad system to be developed by private companies.¹ A series of agreements to this effect was negotiated in 1883. They were resolutely but unsuccessfully opposed by the more faithful adherents of state management. By the beginning of 1884, the whole scheme was definitely settled; apparently fixing the railroad policy of France for some time to come.

The leading bases of settlement are as follows:

1. The state confines its system to a rather small district in the southwest. The isolated lines which it owns in other parts of the country it gives up to the companies in whose district they are situated, making their monopoly all the more complete. By way of compensation it receives a few outlying lines of other companies which might compete with the state in its own southwestern district. It abandons all idea of a Parisian line of its own, merely stipulating for a permanent connection over the lines of the Western Railroad. In giving up the idea of reaching Paris, it gives up all prospect of becoming a controlling power in the French railroad world.

¹ On the most recent phases of French railroad history there is an excellent article by Dr. v. d. Leyen, in the *Jahrbuch für Gesetzgebung* (Leipzig), N. F., viii., 4.

2. The additional lines needed are to be constructed by the companies in whose districts they belong. The state will pay for them all; not at once (except, of course, in its own district), but by annual instalments of about thirteen million dollars each, for seventy-four years; at the end of which time the companies' charters expire, as arranged in 1859, and the whole reverts to the state. What the companies actually do in this matter is to advance the capital, make what they can out of the roads, and receive their pay in instalments; so calculated that at the time when the charters expire they will have recovered their original advances with interest.

The length of the line now in operation and of new line to be constructed under the conventions of 1883, is as follows:

	Miles now in operation.	To be constructed.	Total.
Mediterranean . . .	4,500	1,500	6,000
Orléans . . .	3,100	1,500	4,600
Western . . .	2,500	1,000	3,500
Eastern . . .	2,200	800	3,000
Southern . . .	1,500	1,100	2,600
Northern . . .	2,000	300	2,300
State . . .	1,300	700	2,000
Total . . .	17,100	6,900	24,000

3. The distinction of old and new net-work is given up. The state guarantees each company a minimum dividend equal to that which it has paid in recent years. If the amount available for dividends increases beyond a certain fixed percentage, two thirds of the excess goes to the state. This last provision is not new in France; but previous conventions have only allowed the state one half of such excess. The limits are placed so high as to be almost inoperative. A glance at them will show what profitable investments French railroad stocks have been:

			Guaranteed minimum per cent.	Point beyond which state shares excess.
Northern	.	.	13.5	22.1
Mediterranean	.	.	11	15
Orléans	.	.	11.1	14.4
Southern	.	.	10	12
Western	.	.	7.7	10
Eastern	.	.	7.1	10

It is not easy to pass judgment on the effects of the French system. One thing the figures just given show plainly enough: that it gives the high profits to the railroads.¹ In so far as this result is reached by preventing waste of capital it is good. In so far as it is reached by not building new lines to develop new business, it is bad. In France both these effects are so mixed that it is impossible to separate them.

Up to a certain point, extension of railroad enterprise, whether in the way of construction, facilities, or general policy, is good for the railroads and the community both. For a long distance beyond this point, it on the whole continues to benefit the community, but on the whole does not increase railroad profits, tending rather to diminish them. Finally, we reach a point beyond which any additional construction does the community little good and some harm, while to many of the railroads it means absolute ruin.

The system of free competition in the United States tends to keep railroad enterprise near the last point. The system of non-competition in France tends to keep it from advancing much beyond the first point. And as the abuse of insolvent competition in the United States occasionally carries us beyond the last point, so the abuse

¹ Or at any rate to their stockholders. By far the greater part of the capital invested was furnished by bondholders at a comparatively low rate of interest.

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state will make for itself are therefore less rigid than those which it will make for other people. This may be strikingly seen in comparing the development of roads in Belgium or Germany, where the state owned the leading roads, with that in France, where it merely controlled them. The former was much more untrammelled.

Concerning railroad charges in France, there has been less discussion than in some other countries.¹ The general questions of railroad legislation have been treated from the financial or political standpoint rather than from the industrial one. There can be little doubt that the general effect of the system has been to prevent reduction of rates. If we take figures recently published by Charles Dumum,² a friendly critic, we find that the average charges per ton-mile or passenger-mile have remained virtually unchanged for many years. In the freight rate there was actually a slight increase from 1872 to 1881. The rates in the latter year were 1.55 cents per passenger-mile and .63 cents per ton-mile. These rates are on the whole much higher than those of Belgium, probably somewhat higher than those of Germany, and somewhat lower than those of Austria. Compared with the United States, they are, of course, much lower for passengers, and much higher for freight.

There seems to be no reason to doubt that in a country with such natural resources and such industrial development as France, the railroads might have done much better than this. But it will not do to draw our conclusions too strongly; least of all when they involve a com-

¹ One of the best documents on this subject—Waddington's Report of 1880—is reproduced in full in the English Parliamentary Committee Report of 1882, Appendix, No. 31.

² See *Railroad Gazette*, March 6, 1885.

parison between different nations. The failure to lower average rates is probably due largely to the failure to develop long-distance traffic, as other nations have developed it. Now, this lack of long-distance traffic is doubtless in large measure a result of the railroad policy; but in another sense, it is an independent fact by itself, and the cause of the railroad policy instead of its result. Of all nations on the highest industrial plane, France probably depends least upon her long-distance traffic. By a series of causes, chiefly natural, her industry has been so diversified that she can, to a large extent, live within herself. In some respects she pays dearly for the privilege; in other respects she has a great advantage. The slowness in certain matters of railroad development is but one manifestation of this general character of French industry. We have perhaps done quite as badly in going to the opposite extreme. We have done wonders in the way of reducing rates, but the through freight has had the lion's share of this benefit. Even when the local shipper gets an actual reduction, he may be relatively worse off than before. What the competition for through freight is doing for our railroad interests we know only too well. The average rates per ton-mile are any thing but an infallible sign concerning a railroad's wisdom or a state's prosperity.

CHAPTER XI.

THE RAILROAD SYSTEMS OF CENTRAL EUROPE.

Lack of system in Germany at the outset—Gradual acquisition of railroad property by Prussia—Growth of private lines, 1866–73—Failure to establish an imperial railroad system—Purchase of private roads by the Prussian Government—Austrian history—Mistaken lines of policy—The crisis of 1873—Extension of state ownership in recent years—Early enterprise of the Belgian Government—Period of active competition of private railroads—Their absorption by the state system—Results of Belgian railroad management.

M. M. v. Weber. *Nationalität und Eisenbahnpolitik*, Vienna, 1876.

E. Sax. *Die Eisenbahnen*, Vienna, 1879, pp. 491–526.

In this chapter, as in chap. x., much of the material was inaccessible in its original form, and had to be taken at second-hand from journals like the *Archiv für Eisenbahnwesen* (Berlin), *Zeitung des Vereins Deutscher Eisenbahn-Verwaltungen* (Berlin) *Oesterreichische Eisenbahn-Zeitung* (Vienna), *Moniteur des Initiaux Matériels* (Brussels).

THE contrast between Germany and France, so manifest in almost every department of history, could not fail to show itself in the railroad systems of the two countries. That of France was planned under a carefully devised scheme. It radiated from Paris as a centre. It formed a national net-work, where each part was subordinated to the whole. That of Germany, on the other hand, grew up without any comprehensive plan. The first lines did not even come into communication with Berlin. They were built as local lines to subserve local interests. This was largely due to the political constitution of the country. The smaller states pursued their own way, each for

itself, without regard to national development. They were strong enough financially to adopt the policy of state ownership and carry it out consistently. They actually succeeded in doing what so many of our country towns tried to do a few years ago by municipal subscriptions ; that is, they secured railroad construction for the sake of local interests, where mere business considerations would not have caused railroads to be built. They thus obtained a remarkably uniform development of lines all over the country.

But it was not from these small states that a national railroad policy was to come. The political ties which bound them were too loose to admit of common action in this matter. There was, it is true, a sort of federation of railroads established, the "Verein Deutscher Eisenbahn-Verwaltungen." This did extremely good work ; but it dealt with matters of railroad administration rather than railroad policy in the wider sense. There was but one source whence a national railroad policy could arise, just as there was but one source whence political unity could come. The two movements centred in Prussia.

The original idea of the Prussian legislators seems to have been a combination of the French scheme of regulated monopoly with the exploded English notion of competition of different owners of rolling stock on the same line of rails. The law of 1838 explicitly recognized railroad monopoly rights, protecting them for thirty years against parallel railroad construction. But the scheme was never consistently carried out as it was in France.

About 1842 the policy of subsidies came into vogue ; not on the French system, but in the form of guarantees of interest. With these guarantees there was a further proviso, that if the state was compelled to advance money

in this way, it might, after a certain length of time, undertake running the road itself. Other roads were indirectly countenanced by the purchase of stock on the part of the state, which was thus gradually carried on in the direction of railroad ownership. The first absolutely state-built and state-managed road was one from Berlin toward the Russian frontier, begun in 1848. This was built on military grounds, without much regard to business considerations. Down to 1860 the government continued building a few roads, and at the same time quietly purchased a good deal of railroad stock, devoting to that purpose the proceeds of a special railroad tax.

With the advent of Bismarck to power in 1861, military matters thrust industrial ones into the background. Even the railroad tax was diverted to political purposes. The consolidation of Germany into one nation by the wars of 1866 and 1870 created new lines of traffic, and a demand for new railroads. These were largely built by private companies. The Prussian administration was too much occupied with other social and political questions to give the railroad problem its final solution, or even to decide upon its own ultimate policy in the matter. The time preceding the crisis of 1873 was a period of active railroad speculation, in which the state itself was a participant. In Prussia, as in Belgium, state railroads were simply roads owned by the state, but managed on the same principles, and with the same abuses, as competing private roads.

This was the condition of things down to 1874. At that time the German railroad system was a "mixed" one in the fullest sense of the term. The small states had owned their own roads, in large measure, from the outset. Private enterprise had improvised connections and built

through lines. Prussia owned about one third of the railroads within her borders. Some she had built for military or political necessity, some she had acquired in the way of business, some she had assumed when she annexed the states that owned them.

Bismarck was far from satisfied. He wanted to see a consistent state railroad system, and that not in the hands of the individual governments, large or small, but in the hands of the imperial power itself. He seems to have had this idea in mind from the first. The power of the empire to regulate railroads was established and defined in a series of articles (§ 41-47) of the imperial constitution. This was in 1871. In 1873 a railroad commission (or rather "Railroad Department," *Eisenbahnamt*) was established, consisting of seven members, having power to carry out the provisions of the constitution—among which was one providing for the regulation of rates,—to secure publicity, and to do away with abuses. By this authority a great deal has been done to secure unity in matters of construction, signals, liability, etc. In the matter of rates it has done comparatively little. This is practically not under the control of the empire, but of the individual states.¹

The imperial authorities wanted to do more than control the railroads; they wanted to own and manage them. The first step in that direction was taken in the years 1870 and 1871. When Alsace and Lorraine passed under German sovereignty, the German Empire, as such, was

¹ We must not confuse the Prussian Government with that of the German Empire, merely because the King of Prussia is *ex-officio* Emperor of Germany. If the Governor of New York were *ex-officio* President of the United States, the administrations, National and State, might still remain entirely distinct, with distinct spheres and rights. Such is actually the case in Germany.

the only authority to take charge of the railroads of those provinces, which could no longer remain under the management of the French company to which they had hitherto belonged. This was but a beginning. Four years afterward there was a strong agitation in favor of transferring all railroads in all parts of Germany into the hands of the empire. The project met with favor in Prussia; but in other parts of Germany, especially in Bavaria and Saxony, the states-rights feeling was too strong, and the plan was after a time abandoned.

Foiled in his purpose of a German state system of roads, Bismarck attempted to widen the Prussian state system; and here he succeeded completely.¹ In 1878 there were only about three thousand miles of state-owned roads; two thousand miles more were owned by private companies but managed by the state, while six thousand miles, or more than half, were under private ownership and management both. The state roads themselves were rendered less powerful than the mere figures would indicate, because they were divided into two practically unconnected systems, the Eastern and the Western. This defect was remedied in the autumn of 1879, when the government, by a series of purchases, obtained control of two important east-and-west trunk lines connecting Berlin with Cologne. At the same time a number of other roads passed into government hands. The tendency was too strong to be resisted by the private companies. By the close of the year 1881 the government virtually owned seven thousand miles of road, besides managing two thousand miles more; while there were little more than three thousand miles left in the hands of private

¹ A. v. d. Leyen: Die Durchführung des Staatsbahnsystems in Preussen. *Jahrb. f. Gesetzgebung* (1883), vii., 2, 89-139.

companies. Two of these companies were financially very strong—the “Anhalt” line connecting Berlin with the south, and the Hamburg line toward the northwest. But the government was resolved not to leave its work incomplete. The Anhalt road was purchased in 1882, the Hamburg road in 1884. There are now in Prussia about 13,000 miles of state roads and only 1,000 miles of private roads.

The prices paid were liberal, and sometimes extremely high. The stockholders of the Berlin-Hamburg Company secured an income of over 16 per cent.¹ on the investment; this was decidedly the highest price paid for any road. The purchase was generally made by exchanging for the securities of the roads Prussian 4-per-cent bonds in such amounts as should give the holders about the same income that they would presumably have received had the roads remained in private hands. There was no compulsion exercised. The government offered prices which made it worth while for the companies to sell. The government had a technical right to take the property at a valuation, but it seemed better to make a slight pecuniary sacrifice rather than incur the odium of enforcing this right.

Prussia is now the typical example of state railroad ownership. Of Prussian railroad employés, nearly 80,000 are regularly appointed members of the civil service, with special rights and duties as such. The railroads are made to subserve political and military purposes quite as much as commercial ones. To examine and pass judgment upon Prussian management or Prussian rates, is virtually to pass judgment on state railroad ownership as a system.

Railroad development in Austria² has been more or less

¹In conjunction with a cash payment, which makes the actual return about 17 per cent.

²Th. Haberer: “Geschichte des Eisenbahnwesens,” Vienna, 1884.

closely connected with that in Germany ; but the changes in Austria's political history, and the weakness of her treasury, have made her policy much less consistent. When railroads were first invented, Austria was the home of bigoted conservatism. The Austrian court and statesmen looked upon the new contrivance with a distrust which was from their point of view well founded. Such rapid movement seemed to savor of dangerous radicalism, not to say revolution. The Emperor in 1836 made up his mind to sign a railroad charter only on the somewhat dubious ground that "the thing can't maintain itself, anyhow."¹

Railroads insisted on coming whether monarchical governments liked them or not; and they did so much good when they came that the government soon decided that they were a good thing, and gave them paternal assistance, either in the form of guarantees of interest or of direct state construction. This period in Austria lasted from about 1840 to 1848 ; it was a time of active railroad building. The revolution of 1848 and the Hungarian war threw all industry into confusion. Under these circumstances Austria pursued exactly the opposite policy to that of Prussia. The Prussian Government tried to help railroads by buying them at low prices; the Austrian Government, by selling them at low prices. There can be little doubt that the Austrian Government during this period was greatly influenced by the example of France, and desired not to own its roads, but to have them owned

¹ We must, however, give Austria the credit of being the first country to enact a general railroad law. It provided for a detailed form of previous application ; for the time limits of the charter ; for publicity of rates ; and for reduction in rates in case profits exceeded fifteen per cent. It guaranteed the company against the construction of parallel lines. This law was passed in 1838. Prussia passed a somewhat similar law a few months later. England had nothing of the kind till 1845.

and built by private companies, in systems radiating from Vienna, as the French lines radiated from Paris.

The system was one which did not bear transplanting. It had grown up, and had been found serviceable in France, because France was so closely knit together, and centred around Paris so completely. In Austria it was quite different. The country consists of many distinct states, not even bound together by ties of language or of race. That Vienna is the seat of government for them all, is scarcely more than a political accident. The conditions of trade are in many respects like those of the United States. They have their international cattle trade and grain trade; their combined rail and water routes on export business; their inter-state commerce troubles, and their Granger troubles. They have a water route of dominant importance—the Danube—competing with their east and west trunk lines. With these and many other through-business complications, it is easy to see that the example of France could only prove misleading. They succeeded in appropriating some of its evil results with none of its good ones. The state sold many lines in 1853 at about half their cost of construction. So far was this from stimulating the enterprise of private companies, that in 1859 some of the most important connecting links in Austria's trunk-line system were but half built. Her decisive defeat by France in that year was largely due to the unreadiness of her railroad system; and the same thing made itself felt to a less extent in the war with Prussia in 1866.

The period of listlessness, which ended about the time of the war with Prussia, was followed by a period of wild speculation, which did not end until the crisis of 1873. In spite of stringent legal provisions, the same abuses

manifested themselves in Austria that had been found in other countries with fewer laws. Construction companies were numerous, and left such a bad name that to call a man "a constructor" is in Germany far more opprobrious than to call him a liar. One example will suffice to show the recklessness, or rather light-headedness, of Austrian speculation at this time. It is all the more noticeable because Haberer, in his "Railroad History," relates it as if it were the most natural thing in the world.

"The crisis of 1873 brought to light a serious defect in Austrian law. While one concern after another went under, the holders of bonds or debentures were resting quietly in the belief that their interests were secured. But when one and another of these roads became unable to pay their interest, the matter was looked into thoroughly, and it was found that the whole debt was unsecured; for although there were nominal mortgages on the property, these mortgages had no legal authority, because they were not recorded in the manner prescribed by law."¹

The prostration which followed the crisis of 1873 almost forced Austria into a policy of active state interference. This soon took the direction of extension of state ownership. In Hungary this policy had never been completely abandoned. In Austria itself it had been out of favor for twenty years; and this fact, combined with the not over-prosperous condition of the Austrian treasury, made it impossible to move rapidly. Three quarters of

¹ Haberer: "Geschichte des Eisenbahnwesens," p. 123. Inasmuch as the whole railroad indebtedness of Austria seems to have suffered from this law, it might be regarded as a discovery of some importance. To be sure, there was a paternal government at hand to set it all right. But if this represents Austrian ways of doing business, Vienna ought to offer a good field for some enterprising American lawyers.

the lines are still in the hands of private companies ; and although matters unquestionably tend in the direction of state management, it is as yet impossible to say how far this tendency will go. Still less is it possible to pass any judgment on the results of the policy upon rates, or upon national development. It is all, or nearly all, a matter of the future. Even in Prussia the results are yet far from definite. If we wish to see a state railroad system which has a past as well as a present and future, we must turn from Germany to Belgium.

Of all countries in the world Belgium probably offered the best advantages for a state railroad system. The industry of the country was active and varied. Of a large body of local traffic its railroads were thus sure; and they lay in a position to secure a large share of the transit trade between England and Germany. There was almost no possibility of mistake in locating the main railroads. The centres of industry were well defined; the main lines of trade almost equally well defined. The construction of railroads was easy, a large part of the country being nearly level; almost too easy, in fact, for the very facility of construction offered an inducement to competing or parallel railroads. The government was admirably suited for railroad supervision and management. It was enlightened and progressive, sufficiently centralized to be strong, yet popular enough to feel popular demands. The country was large enough to have an independent policy, not so large that local interests would be sacrificed to that policy. Its credit was excellent, so that it had no difficulty in raising whatever money was needed for public works.

Although Belgium was on the direct line between Germany and London, a large part of the traffic had gone

via Holland, because of the easy navigation of the Rhine to its very mouth. The substitution of rail for water as a means of communication, gave Belgium the opportunity to compete for this traffic. The Belgian Government was quick to avail itself of this opportunity.¹ King Leopold was familiar with England and English business; he foresaw the probable future of the railroad, and he was all the more in a hurry to act, from the fear that certain hated Dutch capitalists might get the start of him. Railroad work was actively begun as early as 1833. The government chose the main lines of traffic, and built its roads there; from Antwerp on the north to the iron and coal regions on the south; from Liége, near the German frontier, to Ostend, the most available point for shipment for England. Private companies were allowed to build lines whenever the state did not choose to undertake the work; they thus furnished a system of branches and connections. In the crisis of 1848 the government went so far as to subsidize some of these private lines. The system as originally designed was virtually complete in 1850.

The early arrangements were admirable for the time in which they were devised. But they were not changed to keep pace with progress elsewhere. The Belgian system of reports and statistics when first adopted was the best in the world; a generation later it was one of the worst. In their engineering arrangements, machine shops, etc., what was at first admirable precision soon became intolerable old-fogyism.² The same conservatism for a time showed itself in the matter of rates.³ Down to 1853 there

¹ Adams: Railroads, pp. 94 ff.

² Report of le Hardy de Beaulieu, Section Centrale, 1880.

³ Charles Baum (*Annales des Ponts et Chaussées*, March, 1882) furnishes strong testimony as to the facts, though he is far from holding the system of state management responsible.

was no system of charges adapted to the wants of business; only the crudest kind of *pro-rata* tariff, with little or no classification.

A radical change in this respect was made at the time when the competition of private companies began to make itself felt. The state stopped building railroads in 1850. Private companies began building faster than ever. For nearly twenty years the government system remained all but stationary, with a length of about 350 miles. The private railroads increased from less than 200 miles in 1850 to 700 in 1860, and 1,400 in 1870. This growth of private railroads was accompanied by their consolidation into powerful systems. Instead of being mere local branches or feeders to the state lines, they had now become rivals for the same through traffic; not quite so well situated, but strong enough to compete actively. With the year 1856 began a period of railroad wars. So far from exercising a dominant influence in railroad tariffs, the state was for the time being completely powerless against the current of events. It abandoned schedule rates, and had recourse to personal discrimination and to special contracts of every kind.¹ It is probable that in these respects the state was a worse offender than the private companies themselves.

It is a curious fact that in any such competition the state is not stronger than private companies, but weaker. Theoretically, it may have the power to forbid private companies engaging in such competition. Practically, public opinion will not allow it to exercise that power. Nor can the state railroads exercise a dignified reserve. If

¹ The government railroads themselves granted special rates to prevent people from using the government's own canals. See Rep. of Joint Select (Parliamentary) Committee of 1872, App., p. 787.

private railroads are run to make money, and succeed in doing it, the state railroads must be run to make money too, or else the authorities will have to face the criticism of an indignant public. And in this money-making race it is impossible for the government to have the same quick elasticity of action as a private company. Thus it happened that the competition in Belgium was quite even. The state had somewhat better routes; but the advantages possessed by private companies in a business fight just about offset this difference.

During the times of active railroad war, the lowering of rates, especially for long distances and for low-class goods, was astonishingly rapid. The results obtained in Belgium in the years 1861-65 were even more remarkable than those reached in the United States some years later. The average freight charge per ton-mile was reduced to about 1.3 cents; the average rate per passenger-mile was even lower. The stress of competition developed such active business management among the railroads that they were able to work with profit at these rates.

Yet this state of things, while seemingly good, was intolerable to the government. The competition of private companies gave it no chance for an independent policy. The political success was not what was generally supposed by the outside world. To Americans, the condition of the Belgian system at that time was known chiefly through the reports of the Massachusetts Commission, and this commission, without the least intentional unfairness, was disposed to look at all these matters in a rose-colored light, because they were desirous that Massachusetts should follow the example of Belgium.¹ They

¹ Massachusetts Reports ii., 52, 53; iv., 67-70, 80, 81. Six years later, Mr. Adams ("Railroads," p. 99) very candidly qualifies the views expressed in those reports.

therefore accepted the Belgian authorities' reports of their own work, without subjecting them to criticism—a dangerous thing to do. The fact is that the Belgian state railroad system, during the time of active competition, was occupied with something else than questions of public policy. It was occupied with making money. It was a responsible and well-conducted company, managed on business principles. It differed from other companies only in the fact that its revenues accrued to the state, and its officials held their appointments from the state.

When the government wanted to obtain real influence as a railroad owner, it bought up most of the competing lines, and made long pooling arrangements with the remainder. This began in 1870; the largest purchases were made about 1873. In 1874 the government owned more than half the mileage of the country; in 1880 it owned two thirds; now it owns about three quarters. The Belgian system of 1885 is a totally different thing from the Belgian system of 1869.

In judging the railroad policy of Belgium by its results, all must unite in admitting that they are in many respects extraordinarily good. What their average rates are, we have already seen. The passenger rates are lower than anywhere else in the world, except, perhaps, on some East Indian railroads. The freight rates are much lower than anywhere else in Europe. Nominally they are about the same as in the United States. Practically they are lower for almost any given service, because Belgium does not have the enormous long-distance traffic which brings down the average in the United States.

Their classification is also excellent. They have now got matters into such shape that the schedules themselves (which go quite into details) furnish a system of rates

adapted to the wants of different lines of business and of different localities. What their rates have done for the development of business is strikingly seen in the history of the port of Antwerp, which is rapidly outstripping the somewhat similarly situated French port of Havre—a difference which is thought to be largely due to the different railroad policy of the two countries.

It is also true that they make a great deal of use of their investment. The average car-load is higher than in either Germany or France, though the construction is the same. The high percentage of expenses to earnings, which is often quoted against them, is really, *prima facie*, in their favor. If a country where the state has a virtual monopoly of railroads shows too small a percentage of operating expenses, it gives good ground for the belief that rates are unnecessarily high, and that industrial interests are being sacrificed to financial ones.

On the other hand, it would be a mistake to use these results as a strong argument in favor of state management. The progress was made during a period of active competition, when private companies took the lead. The foundations were laid in 1853, when competition was beginning. The system developed itself most rapidly in 1861-65, when competition was at its height. Since the state has purchased rival lines, and has had a virtual monopoly, there seems to have been a diminution of activity, and a tendency toward slackness of management. There has been a lowering of profits without corresponding change of rates. Great complaints are made of the lack of cars where they are wanted. Much more serious charges are made by certain high authorities like Le Hardy de Beau-lieu.¹ He asserts that the connection between railroads

¹ Reports, Section Centrale, 1880, 1881.

and politics has produced distinctly bad results; that there has been a multiplication of forms and offices of no use in actual business, and that there have been serious manipulations of accounts to make an unduly favorable showing for the government. At this distance it is impossible to investigate these charges; but they have been made in official form by one of the best authorities in Belgium.

While not withholding the freest praise from the Belgian system, we may fairly ascribe much of its success to other causes than enlightened state management or deliberate public policy.

The railroad history of other European countries is for the most part of much less importance.¹ Some—like Denmark, Norway, or Sweden—show a tolerably well-defined policy, but not an extensive or important system of railroads. Others—like Russia, Spain, or, in some senses, Switzerland,—have important lines, but no well-defined principles of management.²

The case of Italy stands by itself, and must be treated separately. The Italian railroads, regarded simply as railroads, will not compare in importance with those of Germany or France. Nor has railroad economy and administration been developed in Italy as in Northern Europe. But from the political and social standpoint the Italian railroad history is of the very highest interest, and may well be made the subject of a separate chapter.

¹ An exception should be made in the case of Holland, whose railroad history, though less important than that of Belgium, presents points of great interest.

² One important principle has prevailed all but universally. The railroad charters of Continental Europe are granted only for a term of years—not indefinitely.

CHAPTER XII.

RAILROAD LEGISLATION IN ITALY.

Reasons for its importance—Mistaken policy at the outset—Necessity for government action—Purchase of the railroads by the state—Questions regarding their operation—The commission of 1878 and its work—Conclusions unfavorable to state railroad management—Necessity for immediate action—Lease of the railroads to private companies—Details of the contract—Probable result.

"Atti della Commissione d'Inchiesta sull' Esercizio delle Ferrovie Italiane." 7 volumes, 1881.

Cucheval-Clarigny : Les Chemins de Fer Italiens. *Revue des Deux Mondes*, July 1 and 15, 1884.

IT seems like going far out of our way to look to Italy for lessons in railroad policy. One might think that the system and the problems connected with it are so different from our own that only mere curiosity could lead us to study its workings. As far as practical usefulness is concerned, we might suppose it to be a waste of time.

We should make a great mistake. Events have occurred in Italy in the last few years which have an important bearing on railroad legislation everywhere. A parliamentary commission in Italy a few years ago held the most thorough railroad investigation ever made in the world. As a result of their investigation they concluded that the state ought not to run railroads; that although Italy owned its railroads, it ought at once to charter large private companies to manage them. And they have since been occupied with legislation which is to give effect to

these ideas. It is the most decided set-back which the growing tendency toward state railroad management has anywhere received.

Nothing in all this is done at haphazard. When people in England or America talk about state railroads, it is generally mere guesswork. But in Italy it is the result of hard-won experience. They have tried state railroads and private railroads both, and they know what they are talking about. In fact, they have tried almost every possible relation between the state and the railroads. Each of three or four main systems received its original charter from a different government. One derived its being from the Emperor of Austria, another from the Pope. Each charter has been amended over and over again. There has been state assistance of every kind—guarantees of interest, advances of capital, subsidies for building, subsidies for running. The state has built some of the roads. Others it has bought and paid for. Others it has bought and not paid for. It has tried various forms of management—direct state action, lease, and participation in profits. When an Italian Commission speaks of the relation between the state and the railroads, it speaks from experience.

The conclusions of the Italian Commission are the work of cautious and responsible men, who are busy carrying them out in the face of great difficulties. There is no room for experiments. The Italian Government finds it hard work to make both ends meet, and has no money to spend on mistakes. The railroads are not very profitable at best, and any unwise legislation is liable to bring them to the point where they cannot be run at all.

To understand the present state of things we must look back at Italian railroad history. Up to 1859 Italy was

divided into a number of very small states. As far as there were any railroads at all, each state had its own separate system. The systems were not merely independent but isolated ; the railroads of Tuscany did not reach those of Rome, those of Rome did not reach those of Naples. They were all local roads in the narrowest sense. The wars from 1859 to 1870 put an end to this state of things. Connecting links were built, and with them came the inevitable tendency to consolidation. But this was not allowed to take its natural course. The through traffic of Italy runs from northwest to southeast ; that is, it runs lengthwise of the peninsula, or parallel to the central mountain chain. But the old political divisions ran crosswise. They did not want to see their railroads become intermediate links in a line of through communication ; they wanted them to be independent. And besides this local pride, an element of national pride came in also. The men who were planning through routes were foreigners. Italy was herself too poor to go into such enterprises on a large scale ; but she was sensitive, and was afraid to see foreign capital gain a strong foothold within her borders. If Rothschild and Talabot had been allowed to carry out their plans, Italy would probably have had a strong and progressive railroad system. At any rate it would have been organized on the natural lines. But the Italians sacrificed commercial advantage to sentiment—most of it false sentiment at that.

Without going into details, the final result was the consolidation of most of the Italian railroads into four systems—the Upper Italian, the Roman, the so-called Southern (Eastern would be a truer title), and—somewhat later—the system of Calabria and Sicily. The main lines of this

division were marked out as early as 1864, and have continued without much change ever since. The principles of consolidation favored by the state have been entirely different from those of other countries. They have consolidated the competing lines and not the connecting ones. It is almost as if New York had one united system of railroads, Pennsylvania a second, and Ohio a third, absolutely distinct from the other two, and with only cumbersome means for interchange of traffic.

Of course this was a wasteful way of doing things. In the first place, the handling of the through business was bad; and, secondly, since each road was officered by men from one locality, they could not judge when it was worth while to lower through rates to develop business. But if ever the railroads of any country needed to handle and develop their business with the utmost care, it was the railroads of Italy. It spite of large subsidies from government, they found it extremely difficult to meet their obligations. In times of commercial distress the conditions of the charters had to be altered; sometimes the government had to come to the rescue with its credit or money.

The lines of Calabria and Sicily were the worst off. They were built but slowly, and could not pay expenses. The government saw themselves forced to choose between giving up the development of this part of the country altogether, or taking the railroads into their own hands. In 1870 they chose the latter alternative; owning or building the roads themselves, but running them through the medium of a company which receives its pay in the form of a percentage of the gross receipts, all expenses being paid by the state. The average annual gross receipts are in the neighborhood of \$2,000 per mile; the operating expenses, some \$3,000 per mile. Thus the government loses a

thousand dollars a mile annually, besides receiving no interest on the capital invested. And these things seem to improve but slowly.

The Roman railroads did scarcely better, and after many unsuccessful attempts to prop them up by pecuniary assistance, the state in 1873 entered upon a contract to purchase them. But the financial difficulties of the government itself were such that it was not until 1880 that arrangements could be made to fulfil the contract, nor did government take possession till the year 1882.

The Southern railroad formed a rather surprising exception to the general lack of prosperity. It ran along the coast of the Adriatic, through the poorer districts of Italy; it had no towns of first-rate importance on its main route. It was regarded as the most unpromising line in the kingdom. But it had a tolerably long line in the natural direction of through traffic, having formed an important part in the system proposed by Talabot and Rothschild in 1863; and it was managed by men who knew how to make the most of its advantages. They had dared to take the lead in the matter of tariff reduction, even when violently opposed by the government; and they were rewarded by a growth of business which far exceeded their expectations, and which finally threatened to become a means of pecuniary loss to them. For their subsidy contract was a somewhat peculiar one. When it was made, the company had no idea of ever earning \$5,000 per mile annually; and the contract, as a mere matter of form, provided that after the gross earnings had reached \$5,000 a mile the subsidy should diminish as fast as the gross earnings increased. But the net earnings never would increase by quite as large a sum as the gross earnings; the subsidy would diminish faster than the net

earnings would increase. Thus, every bit of traffic beyond \$5,000 per mile lessened the amount available for the payment of dividends. Such a state of things was bad for business in every way, and could not last. But the government was not willing, at the time, to make any changes in the subsidy contract which should ever render it liable to pay more, and the company was equally set against any changes which might render it liable to receive less. The only way open was for the government to buy out the company, and in 1874 and 1876 contracts to that end were agreed upon, though subsequent events hindered their full execution.

Meantime the government was being drawn into arrangements for the purchase of the railroads in Upper Italy. Here it was not on account of business complications, good or bad, but for political reasons. The countries of North Italy, while still under Austrian rule, had been provided with a tolerably complete system of railroads. These were in the hands of an Austrian company which owned other lines farther to the north and east. When part of its lines passed under the Italian Government, the company arranged two separate organizations, one for its Austrian lines, the other for its Italian lines. But of course the same stockholders controlled both organizations ; and the two nations, which might at any moment become enemies, disliked to have their territories connected by such intimate financial interests. The company must become Austrian or Italian—one or the other ; whichever it was to be, the other part must be bought out and separated from the company. Austria felt that she could not buy up her part of the lines and leave the company Italian. Italy was perhaps no better able than Austria, but she was more enterprising ; she undertook to buy up

her part, and leave the company Austrian. Matters began to take that direction in 1873. At the end of 1875 the arrangements were practically complete.

At that time the triumph of the state railroad principle in Italy seemed as thorough as it was in Belgium or in Germany. For one reason or another each important company had been led to abandon its chartered rights. The purchases had not been effected, but there were contracts which must soon lead to purchase. After purchase there must apparently come more immediate state interest and control. Few men could suspect what a different turn the practical management of things was soon to take.

It was a conservative ministry that had purchased or arranged to purchase the railroads; and the ministers who took the lead in this matter, Minghetti and Spaventa, undoubtedly intended that the state should run the railroads as well as own them. But political changes prevented their carrying out this part of the programme. They were forced to resign in 1876, and were succeeded by moderate Radicals. In the course of the same year, after a long debate, the Italian Parliament decided that it was unwise for the state at that time to attempt to manage its own railroads directly, and Depretis, the Minister, was requested to prepare a plan under which the state railroads might be given over to private companies for management.

On what terms should this be done? This was a central point in the whole question, and might be answered in two quite distinct ways. Either the state might pay the companies for doing the work, and take what was left itself; or the companies might pay the state for the use of its lines, and take what was left themselves. In the

first case the state would take the risk, in the second case the companies. In the first case the company would be a mere agent or employé, in the second case a leaseholder. In the second case the state ownership would be little more than a form, as far as concerns its influence on the practical management of affairs. The partisans of a state railroad system would not be satisfied with it.

The Conservative ministers in their provisional arrangements had made contracts of the first form. The companies were to be mere agents to manage roads at the risk of the government. A contract in this sense was arranged with the Southern railroad, though the ministry fell before it could be approved by Parliament. It provided that the working company should be liable for operating expenses, including ordinary repairs, but not for extraordinary repairs or new construction. For repairs and maintenance it was to receive a fixed allowance per mile operated; for train expenses (and profits) it received an allowance for each passenger and each ton of freight, for every mile carried. Further, to stimulate its activity, the company was to be allowed a moderate share in any increase of the gross receipts above a certain sum mentioned in the contract.

This system was never carried out. The new Minister, Depretis, preferred the plan of leases. He proposed that there should be two lessee companies, one running the roads on the east coast and their connections, the other those on the west coast; that the lessees should own the rolling stock, buying at a valuation what the state had now in its possession; that they should pay the state (together) a fixed minimum rent of about nine million dollars: with a variety of minor details. This rental represented about two per cent. on the cost of the roads. It amounted to thirty per cent. of the estimated

minimum gross receipts. The state was to have a considerable interest in any excess of gross receipts above this minimum.

All things considered, this was a good plan. Many of its ideas are incorporated in the bill recently passed by Parliament. But, for the time being, Depretis had no better luck than his predecessor. The extreme Radicals turned out the moderate Radicals at this stage of events, just as two years before the moderate Radicals had turned out the Conservatives. And the extreme Radicals were so far under the influence of socialistic ideas that the principle of state railroad management found favor with many of them. But they were not quite ready for any action, and in July, 1878, referred the whole matter to a special commission.

The Commission of 1878 went to work systematically. It began by circulating throughout Italy, among all classes of men who had any thing to do with railroads, a series of nearly two hundred printed questions, to any or all of which they invited answers, oral or written. Every effort was made to set people thinking on the subject, and to receive answers from all quarters. The questions were made so precise that a man who had one piece of special information might send an answer to one question and let the rest go. An enormous mass of material was thus collected; and it was not until the year 1881 that the commission was able to finish its work. The result of its labors is embodied in seven quarto volumes. Three contain the oral testimony; three more give a digest of the written answers and other material used; the seventh is the report itself. In connection with this immense work, lasting between two and three years, it is interesting to know that the total expense involved was about \$27,000.

The three volumes of oral testimony are of no great interest outside of Italy. It is not so with the digest of materials. This takes up railroad problems in their more general aspects, making use of documents and information from almost every country in Europe. There are detailed studies of the working of state railroad management; of the different forms of government interference; of variations in operating expenses; of the theory of railroad rates, and the probable effect of any changes; with numberless other points of general interest. It is a pity that the fact of its being written in Italian makes it unavailable for so many who might otherwise be glad to use it.¹

The outcome of these studies was the rejection by the commission of the idea that it was a proper function of the state to run railroads.

There had been no lack of argument brought before the commission in favor of a state railroad system. There were the general arguments about monopoly, speculation, arbitrary power, with which we are all familiar. There were special arguments which applied to Italy alone. There were strong men to back them; but both the men and the arguments on the other side were stronger. It is a noticeable fact that the majority of the chambers of commerce were opposed to government management; especially strong was this opposition from the Chamber of Commerce of Milan, probably the place where both systems had been tried most fully.

The more interesting points in the report may be summed up as follows:

1. Most of the pleas for state management are based upon the idea that the state would perform many services much cheaper than they are performed by private compa-

¹ A French translation of part of it has been published.

nies. This is a mistake. The tendency is decidedly the other way. Private companies can do for their patrons many things which the state cannot; but it is doubtful whether the state would be justified in doing any thing of the sort, which private companies cannot. The state is much more likely to attempt to tax industry than to foster it. And when it attempts to tax industry it is more omnipotent and less responsible than a private corporation.

2. State management is more costly than private management. Such at least was the conclusion of the commission, on comparing the results of the two systems. The differences which they bring out are quite marked, though it is fairly open to question just how much they prove. Comparing state and private railroads in different countries, they find that the ratio of operating expenses to gross earnings is always greater on state railroads—averaging 11 per cent. more in all the countries compared. In their more detailed comparisons, the commission take carefully into account the various elements which involve cost of handling; but unfortunately they do not take up the question whether the rates charged on the state railroads considered may not be lower than on the private railroads—a thing which would make the percentage look unfavorable, and yet be rather a credit to the management than otherwise. We cannot, therefore, accept this point without reserve.

3. The political dangers would be very great. Politics would corrupt the railroad management, and the railroad management would corrupt politics. These effects have already been seen in actual working. Changes of rates are made for the sake of influencing elections. A questionable experiment was recently made in Belgium in the matter of railroad tariffs; it had been adopted by the

government as a means of currying popular favor—a kind of bribery to which there is great temptation. It would not be hard to find similar instances in other countries on both sides of the Atlantic.

If then the state railroads are to be operated by private companies,¹ we come back to the question, on what terms? Lease, or salaried management at the risk of the state? As between the two, the commission preferred the idea of lease, but it did not commit itself to either; it chose a middle ground, devising an elaborate scheme of participation of earnings. The leading ideas of this scheme are embodied in the contracts ultimately approved by the Italian Parliament.

While the commission was studying the question, matters were coming to the point where practical solution was growing every hour more necessary.

1. Where the companies were still managing, the rolling stock began to give out. The companies whose roads had been purchased by the state were still in part operating them provisionally from year to year; but they never knew what turn Italian railroad policy might take, so that no one was ready to spend any money now for the sake of the future interests of the roads. The rolling stock had not kept pace with the growth of business; on many lines they were not even attending to renewals. As a result, cars and engines were wearing out very fast; they were already inadequate to the public service, and were growing worse each year.

2. Where the state tried to manage its own roads, it was making a bad failure. This was specially noticeable in the railroads of North Italy. For two or three years after

¹ The commission would have been glad to have the state get rid of its railroads altogether; but this was, under the circumstances, impossible.

the purchase by the state, the company had continued provisionally to run the roads. But in July, 1878, just the time when the commission was appointed, the road was taken out of their hands altogether, and run by the state directly. The ministry were going to show people how to run a railroad, and prove that the state could do it better than anybody else. Unfortunately the event proved just the opposite. The road began to go to pieces. Before the change, the personnel of the railroad officials had been first-rate, and animated by a vigorous spirit of activity; after the change their character went down, their activity slackened. With the same resources they were no longer able to handle the same business. There was a time when the freight service of Lombardy was suspended for every thing but perishable goods, simply because the road could not manage the freight that was offered.

3. There were important financial reasons for a change. The public treasury was in trouble, as is apt to be the case in Italy. In the hard-won resumption of specie payments, it had exhausted all its power. There were no reserve resources. Every thing was taxed as high as it would bear; most things rather higher. The government bonds were so depreciated that it could not borrow money except at a great disadvantage. We have seen how many years it took them to find the means of carrying out their contract to purchase the Roman railroad. The Southern railroad was still unpaid for. Some 3,000 miles of new railroad construction, in addition to the 5,000 miles already existing, had been voted in 1879; but the work was languishing for lack of funds. It was found almost impossible to make the necessary additions to the rolling stock of the existing railroads. Such were the financial elements of the problem—apparently rather a hopeless one; the

state could get no money, the railroads were not particularly profitable: required, an arrangement by which the state should get the money it needed for improvements and extensions, and at the same time make arrangements for the running of the railroads which should be satisfactory to both parties.

The Minister of Public Works tried to gain time by delay, but only made matters worse. The Southern railroad declared that it could not allow the state to defer payment any longer, and that the state had forfeited its right to buy the road on the terms agreed. The result has been that in order to control the road without owning it, the state will have to pay the stockholders a larger sum annually than the interest on the purchase money at the agreed price.

While matters were in this state, about a year ago, the office of Minister of Public Works was offered to the man who had been Secretary of the Commission of 1878. He went to work vigorously; conferred again and again with railroad men and financiers, and, as a result, came forward in the spring of 1884, with a bill which, after a year's discussion, passed the Italian Parliament unaltered in its general features. By contracts which went into effect July 1, 1885, the following principles were established:

1. The roads are to be operated, presumably¹ for sixty years, by two companies, nearly equal in strength, each controlling a trunk-line system running northwest and southeast.² They are to buy at a valuation (at a minimum of about \$50,000,000) the rolling stock now owned by the state. They will keep it in repair at their own charge as

¹ The contract may be terminated by either party at the expiration of twenty or forty years.

² A third company operates the railroads of Sicily, under a contract similar in general form but differing slightly in details.

part of ordinary operating expenses, but will be entitled to receive interest from the state on the sum paid for it. By this sale the state will have a sum of money immediately available for the necessary improvements and extensions it has so long wanted to make. There are provisions by which the operating companies are to aid in this construction, borrowing money for that purpose.

2. The companies then are to pay for ordinary repairs of rolling stock; but what about repairs of line, or about extraordinary expenditures? It is hard enough for any railroad to decide what should be charged to maintenance, and what to construction account, even when the two must ultimately come out of the same pocket; but if the railroad had to pay the maintenance and the government the construction, the case would be infinitely worse. The attempt to decide what should be charged to construction account would give rise to contest and litigation at every step. Powerless to meet the difficulty directly, the Italians try to evade it; and their provisions for that purpose form the most interesting feature in the whole bill.

All the system of division is based upon gross and not net receipts. From the gross receipts deductions are to be made in every instance for a series of reserve funds: (1) \$64 per mile for extraordinary repairs; (2) \$48 per mile single track, or \$80 per mile double track, for renewal of rails; (3) 1½ per cent. for renewals of rolling stock. Actual increase of material or accommodations is to be provided for in a manner analogous to our car trusts; and the means of meeting these obligations is to be provided by a fourth fund "for property increase," derived from the gross receipts in a more complicated manner.

3. It is estimated that the annual gross receipts will be

at least \$19,000,000 for one company and \$22,000,000 for the other. In that case 62½ per cent. will go to the companies for ordinary expenses and for profits, 27½ per cent. to the state for the use of its lines, while the remaining 10 per cent. will more than cover the assessments for the three first funds and the interest paid the companies on the value of their rolling stock ; the balance, whatever it is, goes to the fund for property increase. Any excess of gross receipts above the minimum shall be divided as follows : Property increase fund, 15 per cent. ; renewal of rails and rolling stock, ½ per cent. each ; state, 28 per cent. ; company, 56 per cent. But as soon as the gross return of either company shall be \$10,000,000 above the assumed minimum, the company shall receive but 50 per cent. of any further increase, while 6 per cent. shall be applied to such reductions of rates as the government may indicate. And it is further provided that if either company shall find itself in position to declare a dividend of more than 7½ per cent., half of any such excess shall go to the government.

At this distance it is almost impossible to pass judgment on proposals of this kind. The great danger in any arrangement by which the operating company obtains a determined share of the gross receipts is that the company has a great deal more interest in limiting expenditure than in developing traffic. It gets the whole benefit of any reduction in expenses and only a part of the benefit of any increase in traffic. It is therefore under constant temptation to do two things, both of which are bad for the public : 1, to prefer a small traffic at high rates to a large traffic at low rates ; 2, to limit as much as possible the expenditure for renewals and permanent improvements or to shift the burden of all such improvements on

the owner. The first of these dangers is not provided against by the proposed law. Perhaps it is thought that the Italian Government exercises sufficient power over the tariffs to prevent any such danger. This seems like a mistake. It can prevent any increase in rates, but cannot ordinarily enforce any diminution. But in a growing and active railroad system, the charges ought naturally to diminish. With regard to the second point, the safeguards are carefully planned. The only possible questions are whether the income of the companies will keep the property-increase fund at a proper level, and whether the assessments have been placed at the right figures. If any mistakes have been made here, it certainly is not for want of care or study, and we shall look with interest to see how far the event justifies the expectation of the framers of the bill. For if it should be possible to evade the most difficult questions of construction account by a closely calculated system of reserve fund, the example of Italy would probably be followed elsewhere. But in a matter which is liable to so many disturbing causes as the construction account, any very brilliant success seems too much to hope for.

CHAPTER XIII.

RESULTS OF STATE RAILROAD MANAGEMENT.

Extension of government activity—Motives which have led to it—Principles upon which government enterprises may be managed—Tolls *vs.* Profits—German attempts to base rates upon cost of service—Failure to carry out the principle completely—Local discriminations—The sliding scale—International conflicts—Pools—Rates based on cost of service are almost necessarily high—General arguments for and against government management—The telegraph question in the United States to-day—The railroad question in the future.

Adolph Wagner : "Finanzwissenschaft." Fünfter Hauptabschnitt : Communications- und Transportwesen, etc. 3d ed., Leipzig, 1883, pp. 640-792 (ad ed., pp. 525-675, also published separately).

Emil Sax : "Die Eisenbahnen," Vienna, 1879, pp. 139-264; 404-464.

W. S. Jevons: "The Railways and the State." ("Essays and Addresses," 1874; "Methods of Social Reform," London, 1883.)

THERE can be no question that the sphere of government activity has in the last fifty years been rapidly widening. The postal service has increased twenty-fold, and has absorbed no small part of the express business. Outside of the United States, governments have generally taken charge of the telegraph. The tendency toward government railroad management has been less universal, but scarcely less noticeable. Twenty years ago, government ownership of railroads was the exception, even in Central Europe. To-day, it is far different. The movement which carried Prussia and Belgium into a virtually complete system of state ownership, was not without its effects elsewhere. We have seen how it was to a certain extent

felt in France, in Austria, and in Italy. It was a necessary part of the general movement in European history by which national life and national unity were intensified ; a movement which showed itself on an entirely different side, in the almost universal attempt to extend the protective tariff system. Both these movements, and others like them, were the outgrowth of the spirit which had developed in the great national wars between Italy and Austria, Germany and France, Russia and Turkey. England alone among the great powers remained unmoved either to war, to protection, or to state railroads.

It is not generally known how nearly alone England and the United States stand in depending upon private enterprise for their railroads. Other countries have either gone to the extreme of state ownership, or have at any rate adopted a well-marked system of state support and control. The smaller or less populous states have, as a rule, adopted the former policy, the large states the latter. This is not merely true of Europe (where Switzerland forms the only well-defined exception), but of the world as a whole. In general, the South American states own their railroads ; Brazil owns but a small part of hers, subsidizing most of the remainder. State ownership is universal in Australia ; in India and in British America, it is the exception ; but state subsidy is the rule in India, and is not infrequent in Canada. In Europe, besides the states whose history has been given in detail, state ownership is exemplified in Denmark, Sweden, Norway, and, to a considerable extent, in Holland—not to speak of the smaller states of Germany. The policy of support and control is seen in Spain and Portugal, and, above all, in Russia ; for in Russia the state has furnished a large part of the capital actually invested, and yet has very little actual ownership to show for it.

The motives which have led governments to extend the sphere of their business activity, have been three :

1. To increase their own political influence.
2. To make up for the lack of private enterprise.
3. To avoid the abuses incident to private management.

The last consideration, which is the main point in the United States to-day, has played but a subordinate part elsewhere.

The desire to extend political influence—military, civil, or financial—has usually been the chief motive. Military power has been the leading aim of most government transportation systems, from the Appian Way of Rome to the Trans-Caspian Railroad which Russia is building out into the deserts of Central Asia. It is the desire for centralized power that underlies Bismarck's railroad schemes. It was with this aim that Louis XI., of France, established the first national post-office four hundred years ago ; it was as a means of taxation that his successors and their imitators in other countries chiefly used it for more than three centuries after him.

The wish to make up for the lack of private enterprise has often been the motive which induced government to take up an industry in its early stages. This was the case with canals ; it was the case with telegraphs. It was, perhaps, still more noticeably the case with railroads which were felt to be necessary to national development. Sometimes recourse was had to subsidies or guarantees of interest ; sometimes the state undertook to construct railroads on its own account. Every civilized country, with the possible exception of England,¹ has felt this necessity, and has had recourse either to subsidies or to state ownership. Even in the United States we have had our periods.

¹ England has given subsidies to Irish lines.

of reckless land-grants and equally reckless municipal subscriptions, not to speak of the experiments made at the very outset by the individual States in railroad management, and by the National Government in telegraphy.

To-day we do not feel the force of these motives. Private enterprise in investing capital is too great, rather than too small. The political influence of our administration needs to be checked rather than extended. What we do feel is the set of abuses involved in the present system of private management; and those who desire government management of telegraphs or railroads, do so in the hope that it would be a means to check those abuses.

There is no inherent reason why the rates of government railroads should be differently arranged from those of private railroads. It is not only perfectly conceivable that the two should be managed upon the same principles, but in a great many instances it actually happens. Where a "mixed system" of competing state and private lines really flourishes, this is almost always the case. The state railroads of Belgium and Germany fifteen or twenty years ago were simply ordinary roads whose revenue accrued to the state. As far as their relations to the shippers were concerned, they were run to make money; not with a view to any general considerations of public policy. This was inevitable. The tax-payers will not allow a government to lose money or make small profits on its lines when a competing private road is making larger profits. If the latter is run to make as much money as possible, the former must also necessarily follow its example, and—perhaps in a somewhat disguised form—charge what traffic will bear. This constitutes at once the advantage and the disadvantage of the mixed system. It insures that the state roads will be managed on busi-

ness principles. But it does not leave the government free to manage them with a view to broader principles of public policy, right or wrong. This was probably the great reason why the governments of Belgium and Prussia found the competition of private roads intolerable. It did not interfere with their profits; it did interfere with the freedom of government action.

When the state has its hands free, it has its choice of several aims, instead of being restricted to the mere attempt to make good business profits. A government enterprise may be managed on any one of four principles: 1. As a tax. 2. For business profits. 3. To pay expenses. 4. For public service, without much regard to the question of expense.

Under the first principle, a government enterprise charges more than would be charged by private business. We have few examples of the sort in America. In Europe they are common enough, in the form of government monopolies of tobacco, salt, etc.; taken up, not on account of any business needs, but as a convenient means of taxing the people heavily.

Under the second principle, a government undertaking is managed on the same system as any private enterprise—to make all the money it can. As already indicated, this is regularly the case in those branches of industry where government comes into competition with private concerns; for instance, in the mixed system of railroads, or in the parcels post as a competitor with the express companies. If there is no such competition, but a government monopoly, this second principle cannot, in the nature of things, be applied. When a government monopoly undertakes to make all the money it can, what it gets is not business profit but a tax.

The third principle is the system of tolls, or rates based upon cost of service. On the whole, it is the general principle upon which the industrial enterprises of government are run. The aim may be to cover expenses either with or without counting interest. The interest account is not usually included in considering the cost of the post office; the item is so small that it is possible to neglect it. In most European postal services, and especially in that of England, they aim to do something more than cover operating expenses. In the United States they regularly do somewhat less. In enterprises involving a larger capital expenditure, they aim to cover interest also. This is the case in government telegraph and railroad service, in light-house and hospital taxes on shipping, and in a variety of other cases.

The great mass of government activity is not industrial, and does not seek to pay expenses. It is organized for public service without regard to strictly business considerations. Under this head come the administration of justice, and police service, with the activity of the government in matters of education and health. They cannot pay for themselves, and have to be paid for by taxation.

It is obvious that neither the first nor the last of these principles is a fit guide for state railroad management. We cannot make them either a means of taxation or a means of gratuitous service. The former would constitute a tax on commerce as such—a thing to be avoided. The latter would constitute a tax on the community for the sake of commerce—a thing also to be avoided if possible.¹

¹ The latter alternative is not always avoided. A subsidy in almost any possible form is a tax on the general community for the sake of commerce which could otherwise not exist. If repaid at all, it is repaid indirectly. Another instance of the same kind occurs frequently in the United States postal service. There are a great many mail routes which are necessarily

The choice then lies between the second and third of these principles. It is a question of profits *vs.* tolls. And the two different answers to this question mark two different phases of the state railroad system. The first answer—management for profit—was the earlier one. It was given, in general, whenever there was competition on tolerably equal terms between state and private roads. It prevailed in Belgium till 1870, in Prussia till 1875; in Austria it still prevails to a great extent. When roads are managed on this principle, we usually have the same system of rates which we find on private roads; a system of classification, differential rates, and special contracts. In other words, there is no serious pretence of basing differences in charge upon differences in cost of service.

Under the system of tolls, on the other hand, this is made the fundamental principle. The very first schedules of rates in some countries—Belgium, for instance—were constructed with this idea in view. But these early efforts were extremely crude, and were abandoned about 1850. It was not until 1867 that there were signs of a return to this idea. In that year the railroads of the Duchy of Nassau adopted a tariff avowedly based on cost of service. Four years later the same attempt was carried out upon a much larger scale in Alsace-Lorraine, and from those provinces it spread eastward and northward, and has had a very considerable influence upon the system of charges throughout Germany.¹

In these provinces it was started without any fixed purpose. During the war of 1870, when Alsace and Lorraine were occupied by the German armies, the railroads of

unprofitable To maintain them involves a tax upon somebody—either on the letter-writers on more frequented routes, or on the general funds of the community. The latter alternative is the one usually chosen.

¹ Schreiber: "Tarifwesen der Eisenbahnen," Vienna, 1884, pp. 121-171.

this district were run provisionally by German military authorities—the French officials having, of course, disappeared. Amid the variety of more pressing concerns, the Germans made no attempt to apply a complicated system of rates. They simply established one mileage unit of charge per hundred pounds; another per car-load; and a third per platform car-load. It was a crude *pro-rata* system, with no attempt at classification, except as, incidentally, the most valuable goods would be shipped at parcels rates and the less valuable ones at the car-load rates.

When peace returned the roads remained under the direct management of the empire. What was to be the system of charges? The business of the country had grown up under French classification, and would be thrown into confusion by applying that of Germany. On the other hand, the German officials had been trained in the classification of Germany, and could not successfully apply that of France. There was a conflict between the classification suited to the business and the classification suited to the officials. They compromised by applying no classification at all—just what they had provisionally been doing in war time. What had been adopted as a makeshift now became a settled principle.¹

This is the so-called "natural system." It was adopted in Alsace-Lorraine in 1871; by the connecting roads, on through business to or from these provinces, in 1872; by Baden in 1873; by Hungary in 1874. The rate on any class of goods consisted of a fixed charge to cover terminal expenses, independent of distance, *plus* a rate per mile to cover movement expenses. For instance, the tariff of Southwestern Germany, reduced to American

¹ Schreiber, pp. 153, 154.

units, was approximately as follows, per *ton* of each class of goods :

	Terminal. cents.	Mileage rates. cents.
Express	55	9.00
Parcels	44	3.60
Box car :		
Half car-load per ton	33	2.70
Whole " " "	22	2.25
Platform car :		
Half car-load per ton	33	1.80
Whole " " "	22	1.35
Coal	33	0.90

This system in its complete form did not extend itself widely. But it had a decided influence on the rates and schedules in other parts of Germany. In 1874 Bavaria adopted a "compromise tariff." In the years 1875-76 the same change was urged in Prussia; and in the year 1877 the so-called "reform tariff" of the German Empire came into being. It differs from the natural system chiefly in the existence of a slight amount of classification, which, in practice, amounts to a good deal. The classification and mileage rates (exclusive of terminals) are as follows:

Class.	Cents.
Express	9.0
Parcels	4.5
A1 (general rate for half car-loads)	3.0
B (general rate for whole car-loads)	2.5
A2 (grain, lumber, coal, etc., half car-loads)	2.0
Special I. (grain, etc., car-loads)	1.8
Special II. (lumber, etc., car-loads)	1.4
Special III. (coal, etc., car-loads)	1.04-0.88

Austria adopted a similar system, but did not go quite so far toward the cost-of-service principle. The chief difference was that the German system had equal mileage rates (except for the terminal), while the Austrian system was constructed on a sliding scale, the mileage rates for

long distances being less than for short ones. It should be understood that both in Germany and Austria there are special rates which deviate from the general schedule. In Germany they are rather infrequent, in Austria quite common.

Such is the system of rates which is on the whole most characteristic of state railroad management. It was adopted on two quite distinct grounds, one theoretical, the other practical. As a matter of theory it was thought that rates ought to be based on differences in cost of service¹—or rather, to put it more accurately, that differences in rates ought to be based upon differences in cost of service. As a matter of practice, it was thought that it would result in good both to the railroads and the public. We thus have to consider two distinct questions at the same time: first, how far the theory was actually carried out; and, second, whether the results were good or bad.

First, then, were differences in rates actually based upon differences in cost of service?

As regards classification—differences in charge on different kinds of freight—the theory was never com-

¹ The theory is by no means universally accepted, even by those who favor state management. Gustav Cohn (Engl. Eisenbahnpolitik, iii., 65-84) takes the position that rates can not properly be based upon cost of service; and that, therefore, the state should own the railroads, because private agencies can not be trusted to apply the inevitable principle of charging what the traffic will bear.

Cohn's reasoning is abstruse, but extremely able. As long as we stand on purely economic ground, it confirms the conclusions reached in chap. vi. We are at issue only when it comes to the question, Can the state be trusted to do better than private agencies? A German naturally answers, Yes. An American naturally answers, No.

A few of the best thinkers agree more or less fully with Cohn. The argument of the text is directed against the cruder view which generally prevails.

pletely carried out. Even in Alsace itself, an exception had to be made in the matter of coal—an exception which, by special provision, was sometimes extended to other cheap and necessary articles. A system of rates by which each article pays its share of the fixed charges would virtually prohibit the movement of coal. Yet the moment you abandon this principle you abandon the system of basing rates upon cost of service.

As regards local discriminations, they carried the principle out systematically. Yet even in Germany, where the results were most complete, they overdid the matter in such a way as to prevent the theory from being strictly followed. The theory is this: Each consignment ought to pay a fixed charge, independent of distance, to cover terminal expenses, *plus* a rate per mile to pay for movement expenses. But if they carried this theory out, it would injure both the very-short-distance traffic and the very-long-distance traffic. For the long-distance traffic the mileage rate heaps up so high as to prevent the sale of goods in distant markets. For the short-distance traffic the terminal charge amounts to so much as to make men and goods either go by horse-power or not go at all. It prevents the development of a vast and in some respects easily handled traffic.

The authorities felt the force of these last points, and in order not to check local business, they made their terminal charges very low—lower than the theory demanded. But, according to the principle of tolls, if they made one element of the charge too low, they had to make up elsewhere.¹ This led to a still further increase of the mileage

¹ This constitutes a distinction between rates based upon cost of service and rates based upon what the traffic will bear. In the latter case, they cannot and do not try to make up for any such losses (see pages 122, 123). For the evil effects of thus trying to make up deficits, see page 250.

rates, and matters all the worse for the long-distance traffic.

Belgium and Austria felt this difficulty, and adopted the sliding scale of charges. This was probably good policy, but it was an abandonment of the principle on which they pretended to act. It made the middle-distance traffic pay relatively more profit than the long- or short-distance. In other words they based rates on what the traffic would bear, and then adopted an elaborate system of pulling wool over their own eyes, in order that the schedules might look as though they were based upon cost of service.

Prussia did not adopt the sliding scale as a principle.¹ But down to the year 1880 she did virtually the same thing in another way. The long-distance traffic was favored by an elaborate system of special rates for export, import, or transit trade. They were not, in general, contracts with individual shippers; but each line of goods had a special tariff of its own, applied equally to all who engaged in international business. A decided change was made in 1879-80. Bismarck at that time took up a more distinctly protective tariff policy. To allow these favors to foreign trade was virtually to counteract all such attempts at protection; for in many cases the increased import duties were followed by a lowering of railroad charges which counterbalanced it. To prevent this, the policy of special rates for international trade was abandoned.

Austria was the nation which suffered most directly from this change, because so much of her export trade went into Prussia, or through Prussia to other countries. This trade could not bear the increase of rates. Some of the traffic, instead of going northward *via* Prussia, went southward *via* Trieste and the Mediterranean. But there

¹ Except on special class III. (coal).

was a more direct way of evading the trouble. The river Elbe runs from the Austrian frontier right through the heart of Prussia to Hamburg. By putting steamers on the Elbe, Austria obtained a through rail-and-water route independent of Prussian rail connections. By making use of the Bavarian railroads (which were not under the control of Prussia) Austria was also enabled to carry her products to the Rhine, and thus ship them to Holland, Belgium, or England. The Prussian roads felt the loss of their through traffic. The government withdrew from its extreme position, and attempted a partial compromise with Austria. This was rejected. They then tried retaliation. They made connections with Danube steamers to prevent the Austrian roads from getting Prussian traffic. And thus we had the curious spectacle of a fight of Austrian railroads and Prussian waterways on the one hand, against Prussian railroads and Austrian waterways on the other. Each party succeeded in causing the other a good deal of inconvenience ; but neither party was able to make foreign traffic pay domestic rates. The question has but just come to a settlement.

It is clear that even with the whole power of the European governments, the laws of trade have proved too strong for any arbitrary attempt at railroad regulation to succeed. The effort to base rates upon cost of service has only resulted in a compromise. It must be confessed, on the other hand, that important results have been achieved. They have done away with the most dangerous forms of special contract and secret discrimination. The worst abuses under which we suffer in America have been avoided ; at the sacrifice, however, of many advantages which we enjoy.¹

¹ In the way of rapid development and low through rates.

The real principle on which the Prussian system of railroad charges is based was clearly stated by the government in 1879.¹ 1. The tariff should be clear. 2. It should be equitable. 3. It should not produce bad indirect effects. 4. It should not give opportunities for official corruption and corrupt favors. This is not basing rates upon cost of service (unless by a somewhat strained interpretation of the second heading). It bases them upon intelligible practical grounds, of which any railroad man will see the force, even though he may not deem it possible to apply them to the tariff of his own road.

This effect upon rates can only be secured at the sacrifice of every thing like railroad competition, and of any good which railroad competition may bring in the way of rapid development or of efficient use.

The governments of Central Europe have given up trying to procure obedience to these principles by simple prohibitory laws, such as are occasionally proposed in Congress. They have a hundred times more police power than we have, but they do not undertake to do this. To secure obedience to this system, they must take away the temptation to violate it. This can only be done by a system of pooling contracts. These are accordingly legalized and enforced. They are carried on to an extent undreamed of in America.² They have both traffic pools and money pools. There are pools between state roads and private roads, between railroads and water routes. It is regarded as a perfectly legal thing that one road should pay another a stated sum of money in consideration of the fact that the latter abstains from competing for the through traffic of the former.

¹ Schreiber, p. 144.

² Sax, pp. 84-96. Schreiber, pp. 235-242.

These principles, applied by these means, tend to keep rates up. The roads do not lower the local rates to any extent, but rather raise the through ones. They level up instead of levelling down. They are not occupied with the question how to lower rates, but how to keep the right proportion between existing rates. In trying to decide that matter fairly, they are tempted to put every thing high enough to leave themselves elbow-room. In their anxiety to decide what is a fair rate in proportion to other rates, under existing circumstances, they neglect the question, How can we change circumstances so as to make lower rates?¹

This is an evil inherent in the very nature of tolls. There was never a more mistaken idea than the idea that rates would be reduced if they were based upon cost of service. The principle keeps rates up. If it is strictly applied, it makes it necessary that each item of business should pay its share of the fixed charges. A great deal of business which would pay much less than its share of the fixed charges (though still giving a slight profit above train and station expenses) is thus lost. This is bad for the railroads, bad for the shipper, and bad for the prospect of low average rates. It makes the business of the roads so much smaller that the share of fixed charges which each piece of business has to pay (under this system) becomes higher, while the profit does not increase, and the inducement to new construction is lessened. These things are not mere theory, but are matters of history. The great reductions of rates, whether in the United States, Belgium, or elsewhere, have taken place under the stimulus of competition, even if it was only temporary. They have been made at the very periods when the principle of basing rates upon cost of service was most systematically violated. It is the countries which have passed through

¹ *Railroad Gazette*, 1885, p. 810.

such periods that enjoy the lowest rates. The average rates on all shipments in Ohio to-day are probably lower than the German rates for *coal* for the same average distance. And, finally, the refusal to allow railroads to be run for profits prevents the construction of new roads when they are really needed. If a road with its hands free could just make a profit, a road forced to base rates upon cost of service, and thus check the development of certain lines of trade, could not do so. It would thus have to go unbuilt, or else receive a subsidy—a dangerous policy. The effort to base rates on cost of service goes hand in hand with the policy of subsidies. The money ultimately comes, or is supposed to come, out of the pockets of local tax-payers. Nobody else is enough interested to have the road built. If they are charged what the traffic will bear, they pay it to the railroad direct. If they furnish a subsidy, they pay it *via* the public treasury. Neither way is very satisfactory, but in the United States at any rate we have found the second the worse evil of the two.

To offset these arguments it is urged that the rolling stock is more fully utilized under the Prussian system, and that there is less waste of capital, because the new construction is intelligently adapted to the needs of the country; and that both of these causes greatly reduce the cost of railroad service. Neither point is fully made out. The state roads undoubtedly manage to use a large percentage of available car space. It is by no means clear that they secure the same economy in time. They load cars quite fully, but they seem to keep them idle a long time to do it.¹ In the second point, concerning new con-

¹ In Belgium the complaints under this head are very serious. Cars lie waiting for a load at one point, and are not to be had at other points where they are wanted.

struction, there is much more force ; a force which is nevertheless weakened by two considerations : First, the state is of necessity slow in appreciating the business importance (as distinct from the political importance) of new lines, and thus makes financial mistakes. Second, it is rare that the state does not have to pay more for a given piece of work than would be paid by a well-managed private company.

This brings us to the political dangers of the state railroad system. These have been most forcibly felt in Italy, as detailed in the report of the Investigating Commission. If we may believe M. le Hardy de Beaulieu, an excellent authority, the same troubles are making themselves felt in Belgium. In Prussia there is little or no complaint. This is chiefly due to the superb organization of the Prussian civil service. But the possible dangers—dangers which would be realized under a less stable government than that of Prussia—may be inferred from the number of officials employed in railroad service. Not counting mere laborers, incidentally employed, the number of Prussian railroad officials is about 80,000. There is little need of dwelling upon the evils which would arise from this cause, were such a system applied in the United States.

To sum up : The arguments advanced by the advocates of government ownership start from the idea that government means of transportation will be managed, not with a view to high profits, but for the good of the community. They will thus, it is said, offer low rates, based upon cost of service, and equal facilities without discrimination. The evils of speculation will be avoided. There will be no waste of capital, no construction of two lines where but one is needed. Capital will be put where it will do the most good for the development of the country.

Finally, we shall no longer be at the mercy of combinations of capitalists who manipulate and tax us for their own interests. It is further urged that the post-office shows how government secures to all men low rates, equal facilities, and security against extortion; and it is claimed that the same result might be secured with a government telegraph, or perhaps with government railroads.

On the other hand, the Italian Commission sums up the arguments on the other side by saying, first, that it is a mistake to expect lower rates or better facilities from government than from private companies. The actual results are just the reverse. The state is more apt to tax industry than to foster it; and when it attempts to tax industry, it is even less responsible than a private company. Second, state management is more costly than private management, and a great deal of capital is thus wasted. Third, political considerations are brought into a system of state management in a way which is disastrous to legitimate business and demoralizing to politics.

These conclusions are of the highest importance; but they apply to some forms of industry far more than to others. Where uniform rates are vastly more important than low ones, the evils of taxation are lessened. Where there is no large investment of capital, there is less danger of waste. Where the business is largely a matter of routine, the opportunities for political manipulation are reduced to a minimum.

The conditions which favor state ownership and management of transportation agencies are thus stated by Adolph Wagner,¹ of Berlin, the leader of the German professorial socialists: 1. When the efficiency of the ser-

¹ "Finanzwissenschaft," section 15. See Lalor: "Cyclopaedia of Pol. Economy," article "Transportation," p. 931.

vice requires uniform and wide extension over the whole country and international communications (post-office, telegraph; somewhat less so in the case of railroads). 2. When the service involves any thing like a monopoly, legal or actual (railroads, telegraphs). 3. When it requires constant repetition of the same services, according to fixed schedules, in such numbers as to involve the existence of a large body of officials. 4. When the cost may be lessened by combining a variety of services at small stations (letter and parcels post, railroad stations, and telegraph offices). 5. When the service in private management can only be secured by subsidies on a large scale. 6. When it is necessary on grounds of public policy that the service should inure uniformly to the benefit of the whole people. These principles, he concludes, enable us to speak decisively in favor of state management in the case of letter post and telegraph; more reservedly in the case of parcels post and railways; in the matter of navigation they justify it only in exceptional cases.

On the other hand, W. Stanley Jevons,¹ writing an impartial opinion, but, as an Englishman, averse to great extension of government activity, states the conditions favorable to state management as follows: "1. When numberless widespread operations can only be efficiently connected, united, and co-ordinated in a single, all-extensive government system. 2. When the operations possess an invariable routine-like character. 3. When they are performed under the public eye or for the service of individuals who will immediately detect or expose any failure or laxity. 4. Where there is but little capital expenditure, so that each year's revenue and expense account

¹ "On Government Control of Telegraphs," etc., 1867. In "Methods of Social Reform," p. 279.

shall represent, with sufficient accuracy, the real commercial conditions of the department." Of these principles the fourth is one of the highest practical importance, which must be considered in discussing any schemes of state management; and one which, under a government like that of the United States at present, must generally be decisive.

The question is not to be settled on general theories. Each case must be decided by itself. The postal service obviously fulfils the conditions for successful government management better than other forms of industry. Railroads obviously do not. The telegraph stands midway between the two. It involves far more capital investment than the postal service, and far less than railroads. Its management is less a matter of routine than the postal service, and more so than railroad service.

If we compare the telegraph service of the United States, with that of Great Britain or Switzerland—the two countries of Europe which show the best results from government telegraphy—there is no doubt that the average rates with us, length and distance being taken into account, are less than with them. But for moderate distances the cost, to a private individual, of sending an ordinary message is, on the whole, decidedly less in the more advanced European countries than with us. Concerning the amount of use which is made of the telegraph, we find that the number of messages a year, per 100 inhabitants, with us, is slightly less than with them; the amount of matter sent probably somewhat greater with us, and the total telegraph service, taking distance as well as matter into account, very much greater. We make more use of the telegraph; but they make more general use. The results would have been much more de-

cidedly in our favor had we made the comparison with other countries than Great Britain or Switzerland.

In promptness and efficiency of service we probably have a slight advantage, though this point can hardly be established by argument, and must remain, to some extent, a matter of individual opinion. In utilizing new methods we have a distinct advantage. Witness the obstacles to the introduction of the telephone in Great Britain. On the other hand, any such interruption to the service as was occasioned by our telegraphers' strike in 1883 would have been impossible in Europe.

The industrial results balance so closely that the question must be decided on political grounds. Government ownership of the telegraph would have one great advantage: it would emancipate us from the control of an organization which now has dangerous power, and whose methods have not been in all respects above suspicion. On the other hand, we should increase government patronage, in itself a great evil; we should have a demoralizing item of expense in our budgets, compared with which star routes or river and harbor improvements might sink into insignificance; we should run the risk of having facilities granted and capital invested, not because business needed them, but because they were demanded by doubtful states or influential members of Congress. We should place in the hands of our government an agency which, especially in the present critical condition of our civil service, might readily be used to control political action. Some of the evils which have recently turned men's minds to the thought of a government telegraph, would probably be increased rather than lessened by the change.¹

¹ In the discussions on the subject twelve years ago, the best arguments were those of Wm. Orton and D. A. Wells against government ownership

Government ownership of the telegraph prevailed in Continental Europe, because each country was more or less of a bureaucracy; that is, the civil service governed the country, and was so well organized that it extended itself as a matter of course. In America the civil service is not so well organized, does not govern the country, and is not allowed to extend itself as a matter of course. Political reasons decided the question in favor of a government telegraph in Europe. Political reasons form the main ground against a government telegraph in the United States.

The present importance of the telegraph question in America has thrust the question of state railroad ownership into the background. Every now and then some one demands that the government should have a means of controlling railroad charges, either by a system of water routes or by the ownership of a few among many competing railroads. Neither of these would meet the real evils. It is not general charges that need regulating, but special differences. If you have a water route or competing railroad, you will protect those whose doors it passes, and create differences in their favor against those who are not thus situated.

The idea of government ownership of one among several competing lines attracted undue attention, owing to its supposed success in Belgium. The earlier reports of the Massachusetts Commission—deservedly high authori-

(Proc. of the Com. on Approp. on the Postal Telegraph, 42 Cong. 3., H. R. Mis. Doc. 73). Of the more recent discussion, some of the most important articles are: Hubbard (for government telegraph), *North Amer. Rev.*, 137, pp. 521-535; Green (against government telegraph), *North Amer. Rev.*, 137, pp. 422-434; Means (against government telegraph on broader grounds), *North Amer. Rev.*, 139, pp. 51-66. The best comparative statistics are in United States Census, 1880, vol. iv., gen. folios 805-849.

ty—favored the idea. But it was never carried to a successful conclusion in Massachusetts; and it was abandoned in Belgium, the government purchasing a large part of the private railroads. The competition with private lines had been too onerous for the Belgian Government, and had left it too little independence of action. The private lines regulated those of the government rather more than the government regulated the private lines. Experience is against the probability of success in the attempt on the part of government to regulate either railroads or telegraphs in this way. To do anything efficient, it must control not a few lines, but the whole system.

There is a strong popular feeling, to a large extent unsuspected by those in authority, in favor of government ownership of railroads as a system. No one can have much to do with the more thoughtful workingmen without finding how strong that feeling is, and what hopes are based upon it. The fact that the question is not now under discussion must not blind us to the fact that forces are at work which may prove all but revolutionary when the question actually does come under discussion. If it be true that government railroad ownership would be a most serious political misfortune for the United States, we must be prepared to meet the danger with our eyes open. Unless we are able to face it intelligently, and to show reason for our action, the widespread feeling in its favor will prove too strong for us. It may not come for many years; but the lessons of the Granger movement show plainly enough what forces will lie behind it when it does come.

APPENDIX I.

RAILROADS OF THE WORLD, JANUARY 1, 1884.

		Miles.	Capital invested.	Per mile.
America		140,000	\$8,400,000,000	\$60,000
Europe		114,000	13,110,000,000	115,000
Asia		11,600	775,000,000	66,000
Africa		3,400	240,000,000	70,000
Australia		6,500	325,000,000	50,000
		275,500	\$22,850,000,000	\$83,000

The figures of cost commonly quoted are those of the French *Bulletin des Travaux Publics*. They are in almost every case too high. Neumann-Spallart "Uebersichten 1881-2," (1884) pp. 437, 438, makes the necessary corrections for Europe, but has not done the same for Asia and Australia. The figures for Africa are very uncertain.

The special tables are based partly on the *Archiv für Eisenbahnwesen*, Jan., 1885, and partly on the investigations of Neumann-Spallart; but neither authority has been followed in every detail.

It has been almost impossible to obtain train-mileage and ton-mileage statistics with the completeness which is necessary for detailed comparison.

In comparing the figures for the United States with those for other countries, it should be remembered that our rolling stock is much heavier and larger than theirs, so that a direct comparison of the equipment figures does us injustice. It must also be borne in mind that the average distance over

which each passenger or ton is moved is far greater in the United States than in Europe.

	Length, Jan. 1, 1884.	Per cent. increase in 5 years.	Miles of road to 100 sq. miles.	Miles of road to 10,000 inhab.	Cost per mile. Dollars.
Germany . . .	22,300	8	10.6	4.9	105,000
Gr. Britain and Ireland	18,600	5	15.2	5.3	204,000
France . . .	18,500	18	9.	4.9	128,000
Russia . . .	15,700	7	0.8	1.9	80,000
Austria and Hungary .	12,800	12	5.3	3.4	105,000
Italy . . .	5,900	13	5.1	2.	92,000
Spain . . .	5,100	16	2.6	3.	78,000
Sweden . . .	4,000	14	2.3	8.7	30,000
Belgium . . .	2,600	6	23.2	4.8	132,000
British India . . .	10,500	20	0.7	0.4	66,000
United States . . .	120,000	43	3.4	22.5	61,000

		Equipment per 100 miles.			Pass. moved (millions).	Tons moved (millions).
		Locom.	Pass. cars.	Freight.		
Germany . . .	1882	51	95	1,081	224	198
Great Britain . .	1882	76	232	2,298	655	291
France . . .	1881	46	105	1,207	180	93
Russia . . .	1881	40	50	775	33	14
Austria . . .	1882	30	62	716	47	70
Italy . . .	1882	29	88	510	34	11
Spain . . .	1880	26	77	468	15	9
Sweden . . .	1881	16	36	401	7	5
Belgium . . .	1881	72	139	1,840	57	37
British India . . .	1883	24	65	436	65	19
United States . . .	1883	22	21	663	313	400

APPENDIX II.

THEORY OF RAILROAD RATES.¹

THE difficulty with most theories of railroad rates is that they are not based on actual practice, but upon somebody's preconceived notions of what that practice ought to be.

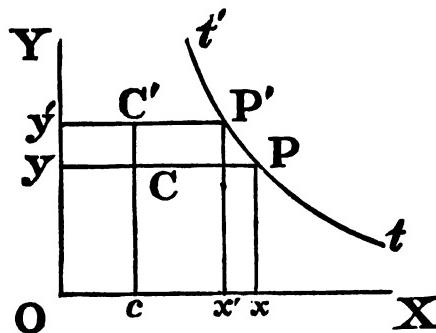
The practical railroad manager has one general principle in this matter. He lowers rates whenever he thinks it will increase net earnings—in other words, as long as it will increase gross earnings faster than it increases operating expenses. Any theory which shall correctly represent American railroad practice, must be based on this principle.

The first thing to be noticed is that it has the form of a differential equation. The manager lowers rates until the differential of the gross earnings on a particular line of traffic ceases to be greater than (*i. e.*, becomes equal to) the differential of the operating expenses. Let us analyze this equation into its elements.

The rate is the independent variable. The volume of traffic is a function of the rate; as the rate diminishes, the volume usually increases and never diminishes. Let x = the rate per car-load for a particular class of goods between two given points, and y = the number of car-loads obtained at that rate. The successive values of y corresponding to successive reductions of x will form a *traffic curve* whose general form is shown on the following page.

¹ This is simply carrying out in detail the principles laid down on pages 109, 110. It differs in form from the analysis of Lardner, of De La Gounerie, or of the Italian Commission.

($tPP't'$ is the traffic curve. A rate Ox gives a volume of traffic of xP car-loads; a reduction of the car-load rate to Ox' increases the number of car-loads to $x'P'$. The special circumstances which affect the form of the curve for different lines of traffic will be discussed later.)



The rectangle $OP = xy$ = the rate per car-load multiplied by the number of car-loads obtained, obviously represents the gross earnings from this particular branch of traffic.

Now let c = the expense of hauling each additional car-load. In the long run this will vary a good deal, but for a particular branch of business at a particular time, it will have a tolerably determined average value, which may be treated as constant. What constitutes this additional expense is not easy to determine on general principles. In the long run it would include a full share of train and station service accounts, a large share of car maintenance, and a moderate share of track maintenance and general expenses. It is the special expense of each particular piece of work as distinct from the general expenses of running the railroad as a whole.

Then cy , (the rectangle OC), will represent the special expense of handling y car-loads; and $(x - c)y$, (the rectangle cP), will represent the profit in the widest sense; i. e., the share which this particular line of business can contribute toward

the general expenses and dividends. It is this rectangle which the manager tries to make as large as possible in each particular case. The question is, How will a reduction in rates affect this rectangle? Let a reduction be made to x' , increasing the volume of traffic to y' , the gross earnings to OP' and the expenses to OC' . The increase in gross earnings $= yP' - x'P = x'\Delta y - y\Delta x$. The increase in operating expenses $= yC' - cP = (x - c)y$. At the point where the former ceases to exceed the latter, the differentials must be equal. Then $x\Delta y - y\Delta x = c\Delta y$; or $(x - c)\Delta y = y\Delta x$.¹ The same result might have been obtained in another way. The rectangle $cP = (x - c)y$. The railroad manager wishes to make this a maximum. Its first differential must therefore equal zero. Then $(x - c)\Delta y - y\Delta x = 0$; or $(x - c)\Delta y = y\Delta x$.

We thus have an exact mathematical statement of the principle from which we started; and more than that, we have it in a form which shows the relation of the different elements involved. We have a general theory based on a recognized practice; it only remains to consider how this theory works in special cases.

i. Rates as affected by conditions of traffic. The traffic curve is to a large extent independent of the action of the railroad manager. It depends upon general business conditions; the railroad manager tries to put his rates at such a point as to make the most under those conditions.

Each class of articles has a curve of its own. The form of the lower (right hand) end of the curve depends mainly upon the value of the article. On cheap articles a high rate would stop nearly all shipments; that is, this end of the curve soon approaches the axis of X. On articles of high value, on the other hand, the rates may be placed quite high without stopping shipments; the curve for these extends far to the right.

¹ For convenience of illustration, the differentials themselves are all treated as positive. Due allowance for this is made in the signs of the terms.

For competitive business the curve is very much like that for cheap articles ; a rate much above cost is sure to destroy the business, because it will go by some other route.

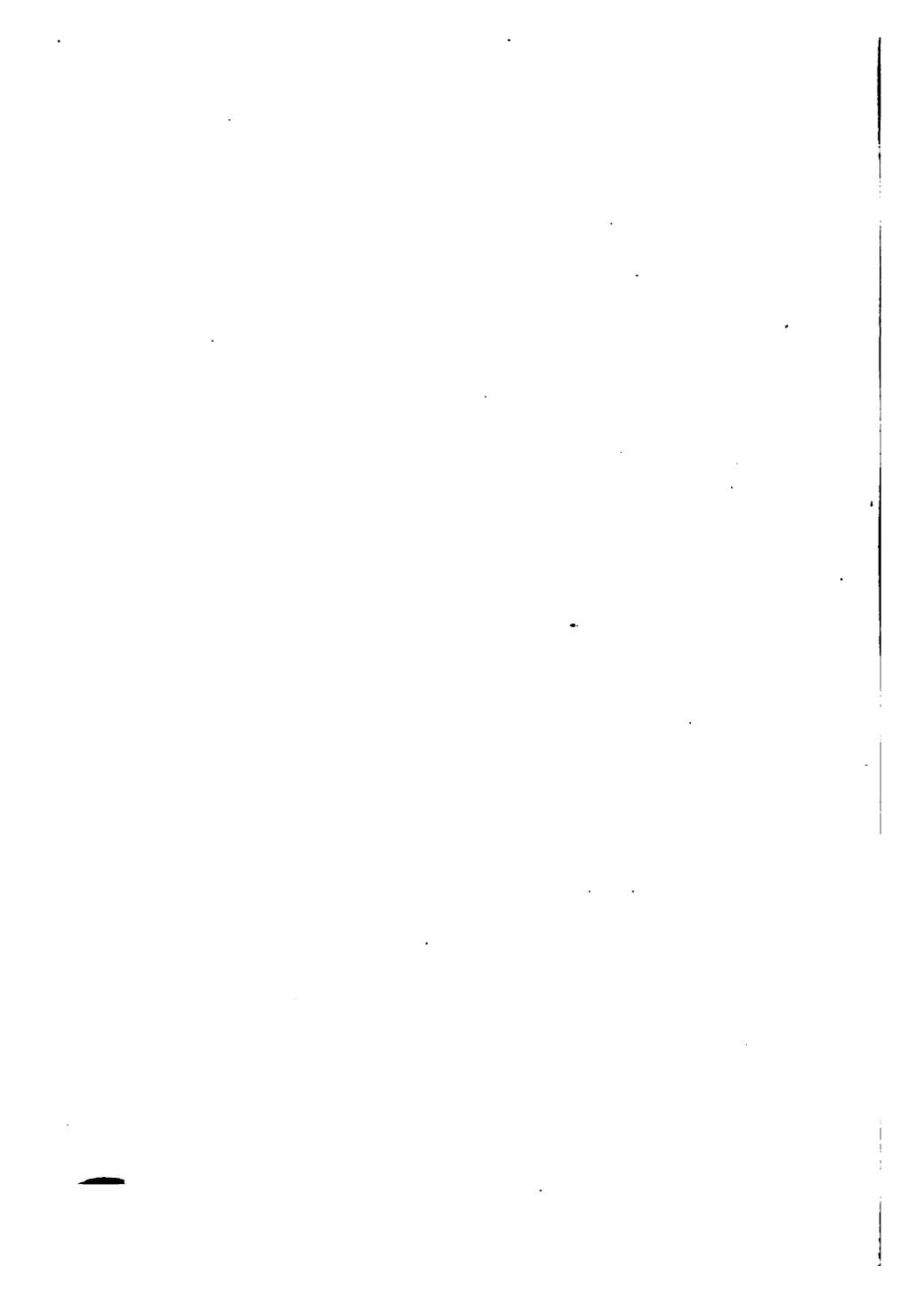
The upper end of the curve does not depend so much upon value as upon *expansiveness* of supply and demand. Where either of these is limited, the curve soon approaches the axis of Y. Where they both expand readily, the curve runs up almost perpendicularly. An inspection of the figure is sufficient to show why such traffic best lends itself to reduction in rates. The traffic in food, fuel, and other articles of common use furnishes the best examples of this ; but it is generally true of the long-distance traffic, by which new sources of supply are developed.

Thus the possibility of charging high rates depends mainly on the value of the articles ; but the profitableness of making large reductions depends on the expansiveness of the traffic. If reductions are made on traffic which does not expand, somebody else besides the railroad gets the whole benefit. Where the supply can expand, but the demand does not, the benefit goes to the consumers. This is the case in *general* reductions of rates on manufactured articles where there is no pool. If the demand can expand more readily than the supply, the reduction in rates goes into the pocket of the producers or middlemen. This is the case in the milk traffic.

2. *Rates as affected by cost of service.* Any thing which diminishes the expense of handling additional traffic makes it advantageous to reduce rates lower than would otherwise be the case. For if, previously, $xdy - ydx = cdy$, any thing which diminishes c without changing general business conditions will make $xdy - ydx > cdy$; that is, it will place us at a point where further reductions in rates increase gross earnings faster than they increase operating expenses. It is for this reason that *rates based upon what the traffic will bear, in many instances seem to be based upon cost of service.*

We have thus far confined our consideration of cost of ser-

vice to operating expenses in the narrowest sense of the word. It is now pretty well understood that fixed charges do not directly affect rates ; nor do dividends affect them, except in so far as a road which is paying very high dividends may reduce rates lower than it otherwise would, in order not to tempt new capital into the field. But while fixed charges are not taken into account in making rates, the *prospective* traffic and rates are (or ought to be) taken into account before incurring fixed charges. The practical question of chief importance is, How far is it worthwhile to increase fixed charges for the sake of reducing operating expenses ? To the formulation of this problem our mathematical analysis readily lends itself ; but as it is simply a restatement of old and well-recognized results, it is unnecessary to carry the matter out in detail.



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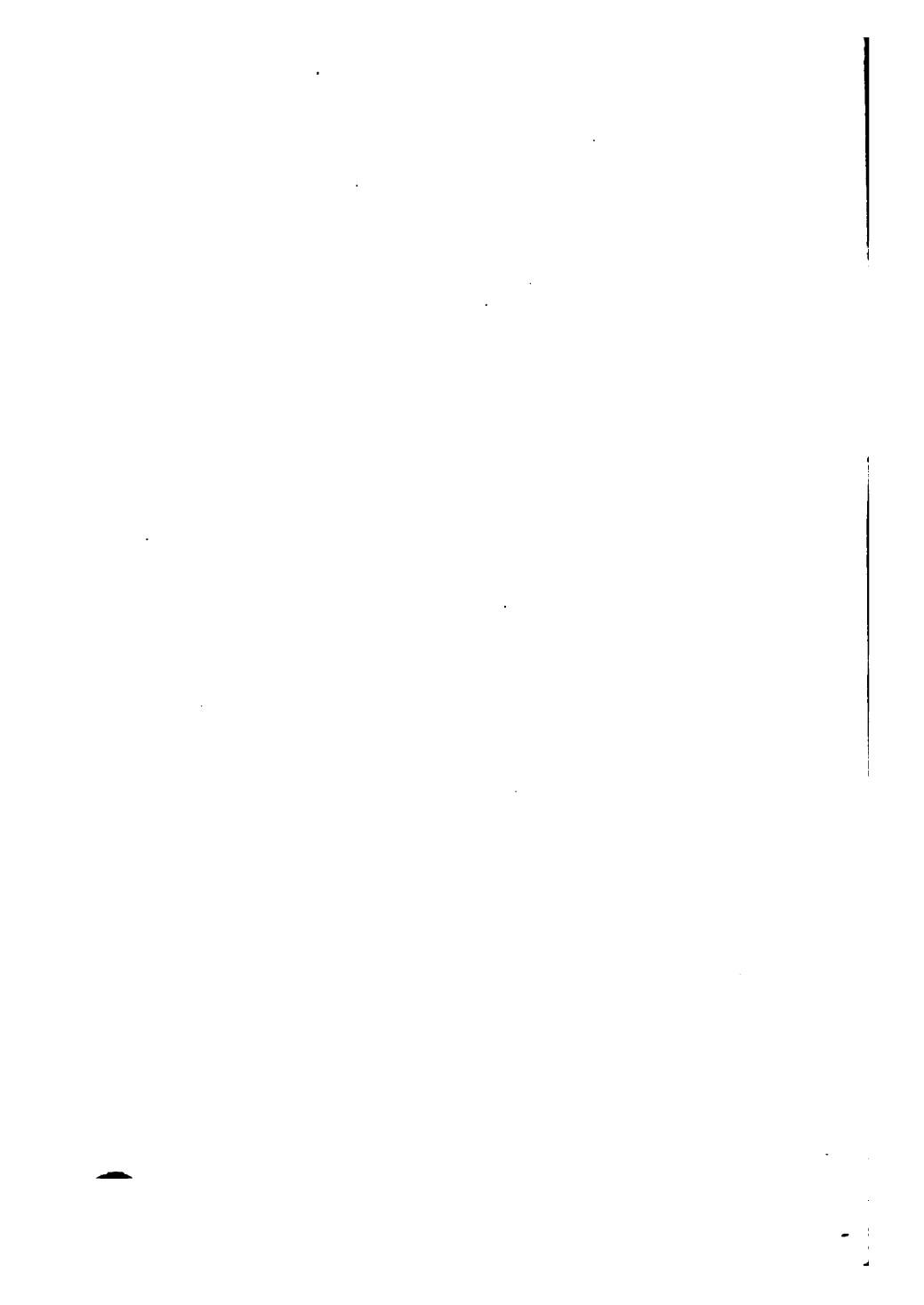
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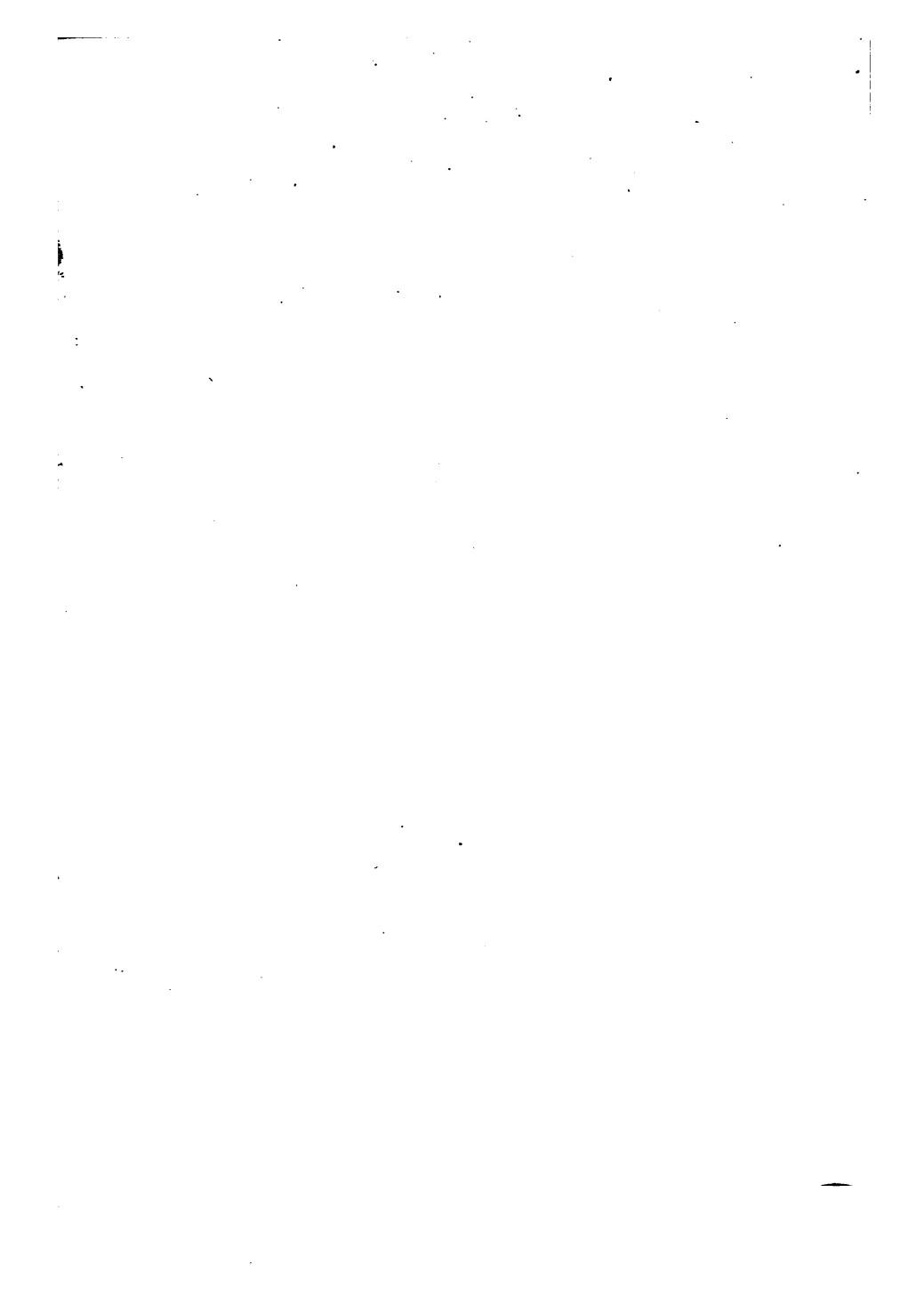
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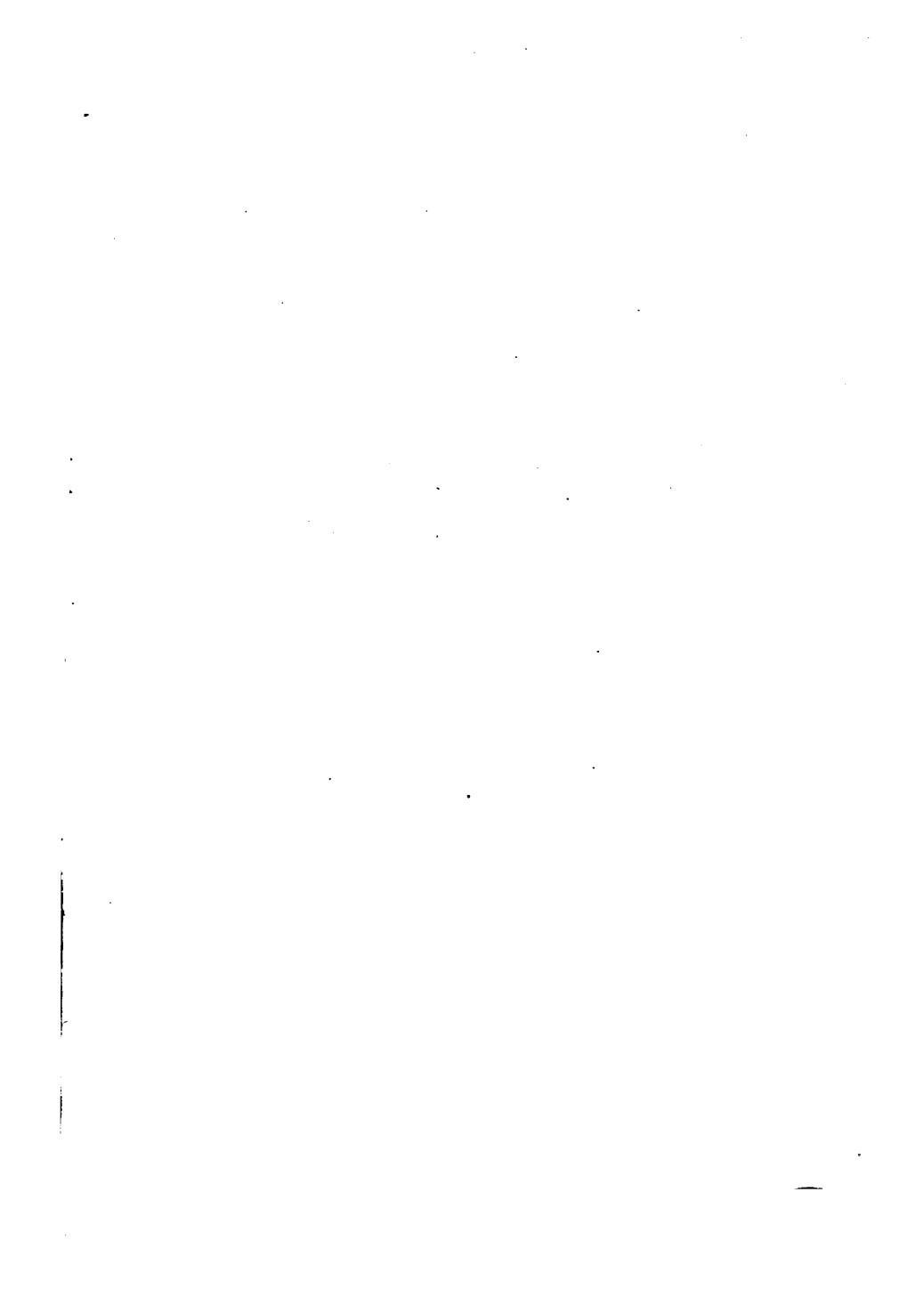
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